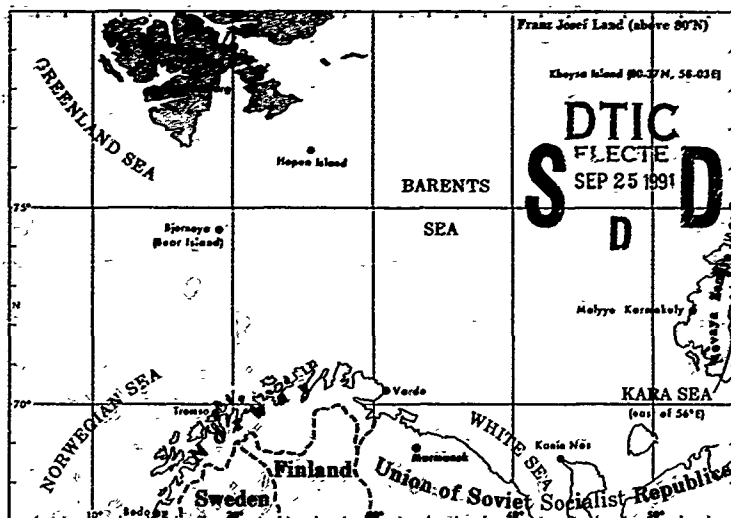




U.S. NAVY REGIONAL CLIMATIC STUDY OF THE BARENTS SEA AND ADJACENT WATERS

OCTOBER, 1990



PREPARED BY
NAVAL OCEANOGRAPHY COMMAND DETACHMENT
ASHEVILLE, NC

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
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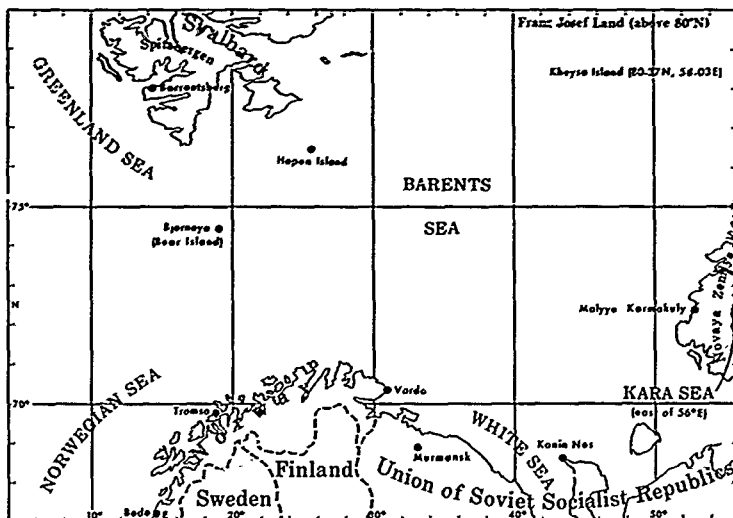
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U.S. NAVY REGIONAL CLIMATIC STUDY OF THE BARENTS SEA AND ADJACENT WATERS

The U.S. Navy Regional Climatic Study of the Barents Sea and Adjacent Waters was prepared for the Commander, Naval Oceanography Command (CNOC) by the Officer in Charge, Naval Oceanography Command Detachment, Asheville, NC. The work was performed in Asheville at the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC). The surface marine and coastal station statistics presented in this study were made possible through programs designed at NCDC and funded primarily by CNOC in support of U.S. Navy's continuing marine climatology requirements.

Special acknowledgement is given to the following meteorologists of NCDC's Global Climate Laboratory (GCL): William A. Brower, Jr., for serving as project leader and climatic analyst; Phala L. Franks, for performing the computer processing and editing of marine data; H. Lawrence Nicodemus, for development and production of the Station Climatic Summaries; and Michael J. Changery, for performing an editorial evaluation of the text, isopleth analyses, and graphics products. Specific acknowledgment is also made to GCL's Ronald G. Baldwin, computer programmer/analyst, for production of the computer-generated graphic presentations, and Michael G. Burgin and Scott J. Miller, meteorological technicians, for their drafting skills in preparation of this publication for printing.

Geographical Coverage

This climatic study covers the Barents Sea and adjacent waters between 67° and 80° north latitudes and 04° and 56° east longitudes. Figure 1 shows the Area and the locations of 10 coastal and island stations for which climatic statistics are presented.

Climatic Data and Summaries

Surface marine statistics are presented on monthly charts in the form of graphs, tables, and isopleth maps. Statistics include the means or percent frequency of occurrence of threshold values for wind, visibility, clouds, precipitation, air and sea surface temperatures, ocean waves, and sea ice. The marine statistics, for other than sea ice, are based on 773,000 hourly observations taken from NCDC's Tape Data Family 1129 (TDF-1129). These observations were collected by ships of various registry frequenting the marine Area over the period 1854-1987.

Many of the ships' observations are presently transmitted over the Global Telecommunications System, captured and archived. Other observations are digitized from ship log forms by various participating members of the World Meteorological Organization, and exchanged under international agreement among the various maritime nations of the world. Although data for this study dates from 1854, most of the observations have been collected in the past 40 years, which is significant because recent observations contain more elements than pre-1948 reports. The density of observations is greatest along major shipping routes which, in the Area, connect all the major ports of the region through the shipping corridors of the Barents, Norwegian, and Greenland Seas.

The TDF-1129 data were subjected to thorough computer and visual quality control to eliminate duplicate observations and exclude questionable elements detected during internal consistency and extreme value checks. The edited data were computer summarized and plotted by 1° latitude by 2° longitude quadrangles and subjectively analyzed by a meteorologist in order to produce isopleth maps. Subjective adjustments were made to the analyses when data biases or insufficient observations were evident. Consistency checks were also made in the sets of monthly patterns for each element and among elements, as well as comparative checks with other marine atlases and publications.

Computer graphs and tables of visibility, wave heights, and wind roses are also presented by quadrangle on monthly charts. The legends on the charts contain detailed instructions on how to read the graphics. The graphs and tables represent the objective compilation of available data. These data were not adjusted for suspected biases (low observation count, heavy weighting of observations taken during relatively short time intervals, biases in coding of observations from various source decks, etc.); hence, differences may be found when comparing the graphical data with the isopleth analyses. The total number of observations for a given quadrangle should always be considered when interpreting the data because there may not be a sufficient number for the calculation of climatically representative statistics.

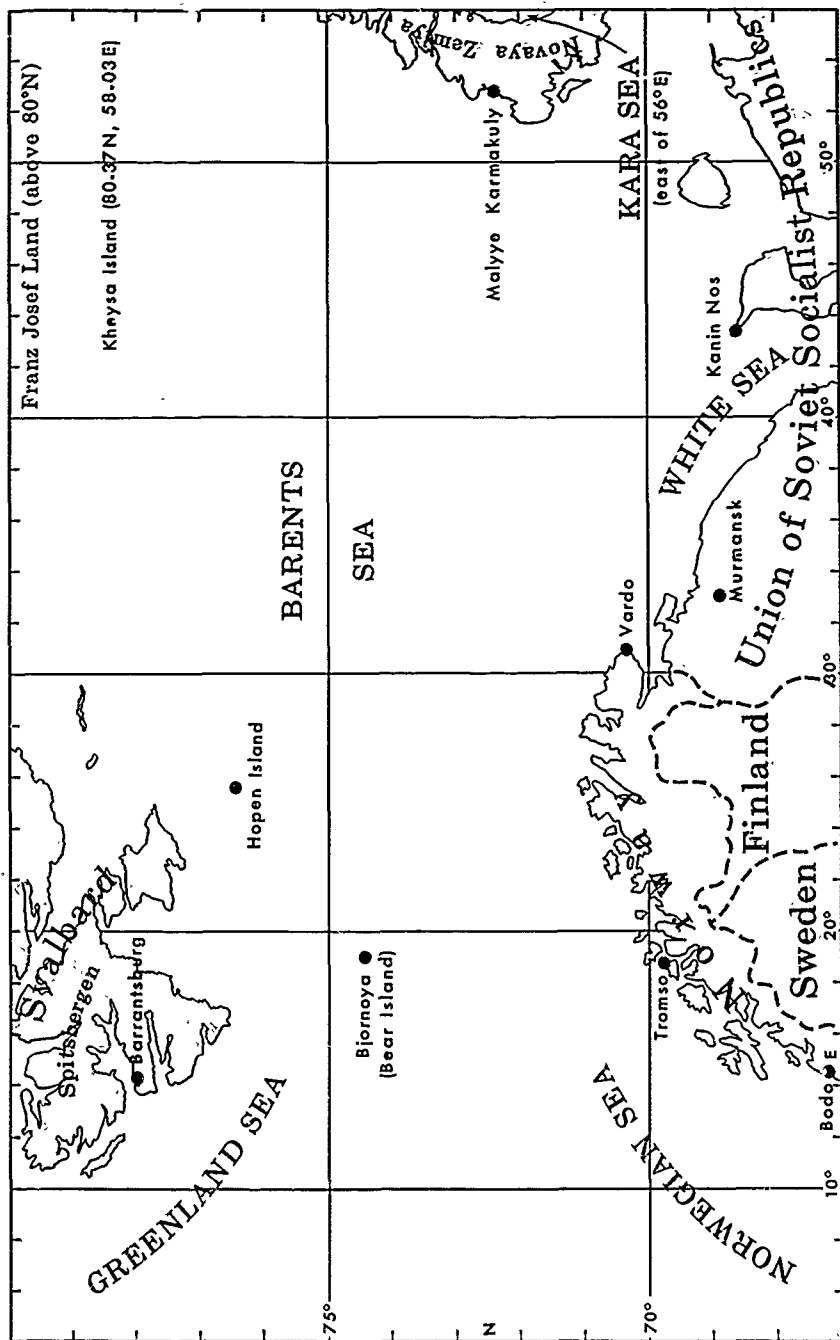


FIGURE 1. STUDY AREA LOCATOR MAP

Sea ice in the Area throughout the year restricts shipping, and the collection of marine observations, to ice-free waters. For this reason, sea ice statistics are presented along with the marine isopleth parameters. The ice statistics were taken from U.S. Navy's Sea Ice Climatic Atlas: Volume II Arctic Ice East (NAVAIR 50-1C-541). The mean ice edge is displayed on all isopleth charts, and additional ice information is included with the isopleth charts for sea surface temperature and wave heights. The degree of statistical confidence is low for all isopleth analyses extending beyond the mean ice edge, the area having little or no data. Isopleth analyses beyond the mean ice edge were based principally on extrapolations of weather patterns identified by isopleth analyses over ice-free waters and during warmer months, the area and time of greater data availability, and other marine and continental atlases and publications.

The ice isopleths presented give the percent probability of ice extremes and concentration for the Barents Sea and adjacent waters. Actual concentration boundaries, under the influence of changing synoptic meteorological and oceanographic situations, may vary widely from the averages. An isopleth label, therefore, does not explicitly define the conditions on either side of the line since presence of sea ice is discontinuous in nature and regions of 80% mean ice concentration may be bordering regions of 20% ice concentrations with no intermediate region of 50% ice concentration. However, the inherent continuity of persistence of sea ice features permit an isopleth presentation to provide meaningful information. The sea ice data were derived from digitized weekly analyses of sea ice conditions based primarily on satellite imagery (90%) supplemented by ship and shore reports and aerial reconnaissance. These weekly polar sea ice analyses have been operationally produced by the U.S. Navy/NOAA Joint Ice Center (JIC) since 1972. In 1981, JIC initiated a Sea Ice Digitization Program to digitize the weekly polar ice maps as they become available. NCDC was funded by the U.S. Navy to design software and digitize all weekly ice concentration charts available since 1972, and produce polar ice atlases based on data through 1982. The Antarctic Ice Atlas was published in 1985, and the Arctic West and the Arctic East Atlases in 1986. Ice data for 1990 are presently being digitized.

Station Climatic Summaries (SCS) are presented in tables for the 10 coastal and island stations shown in Figure 1. Table 1 lists the station name, location coordinates, and period of record for the hourly (telecommunications) data which were processed for each of the stations. Data for these 10 stations were taken from the edited digital files of the U.S. Air Force's Environmental Technical Applications Center (ETAC) in Asheville, NC.

TABLE 1. Climatic Summary Stations

WMO NO.	STATION NAME	LAT (°N)	LONG (°E)	PERIOD OF RECORD
01025	Tromsø/Langnes, Norway	69-41	18-55	1973-1989
01028	Bjornoya Island, Norway	74-31	19-01	1973-1989
01062	Hopen Island, Norway	76-30	25-04	1973-1989
01098	Vardo, Norway	70-22	31-06	1973-1989
01152	Bodo, Norway	67-16	14-22	1973-1989
20046*	Kheysa Island, USSR	80-37	58-03	1973-1989
20107	Barentsburg, USSR	78-04	14-13	1973-1989
20744	Malye Karmakuly, USSR	72-23	52-44	1973-1989
22113	Murmansk, USSR	68-58	33-03	1973-1989
22165	Kanin Nos, USSR	68-39	43-18	1973-1989

* Station located just NE of Area (where no marine data exist)

A word of caution. The intent of this atlas presentation is to gather and present existing data on climatological conditions within the marine and near coastal areas of the Barents Sea and adjacent waters. The data are presented without discussion and interpretation. Given the information presented in the introductory text, legend descriptions on all charts, and numbers of observations displayed with the graphics presentations, the user should be able to assess the degree of statistical confidence in the presented climatology for a given month and location. As stated earlier, because little or no data were available within the ice-covered waters of the Area, the degree of statistical confidence must be considered low for all marine statistics extending beyond the mean ice limit displayed on each isopleth chart. In addition, after the marine isopleth analyses were completed and artwork begun, it was decided to include climatological statistics for the 10 coastal and island stations in order to present a better climatological picture of the Area. Differences, therefore, may be found when comparing the station tabular data with the marine isopleth analyses.

Physical Features

The Barents Sea, a major outlying sea of the European sector of the North Polar Basin, is bordered on the south by northern Norway and Russia and the White Sea and on the east by the great archipelagoes of Novaya Zemlya, which separates the Area from the Kara Sea, and on the north by Svalbard and Franz Josef Land and the Arctic Ocean. The straits sandwiching Bjornoya (Bear Island), an island midway between Norway and Spitsbergen defining the western limit of the Barents Sea, connect the Barents Sea with the neighboring deep waters of the Greenland Sea to the west and the Norwegian Sea to the southwest. West and southwest beyond the Area lie the islands of Greenland and Iceland. The Barents Sea covers a relatively shallow continental shelf fringing the Eurasian landmass. This shelf floor, which is covered by sand, silts, and a sandy-silt mixture, is 750 miles across and is a part of the widest shelf in the world. The Barents Sea's area is 542,000 square miles--about the size of the Gulf of Mexico--and has an average depth of 750 feet, with a maximum of 2,000 feet within the east-west oriented Bear Island Trench located south of that island. Numerous minor relief features, probably caused by glacial action, are scattered throughout the Area. Although no true submarine canyons are known in the Area, glacial-type submarine valleys extend seaward from the mouths of many fiords. Nearly all seismic activity occurs west of the Area along the Mid-Atlantic Ridge, running north through Iceland, Jan Mayen, and west of Svalbard to the polar regions. Figure 2 provides some general bathymetry information.

Surface currents in the Norwegian, Greenland, and Barents Sea are generally counterclockwise. Seasonal location of sea ice in the Area varies greatly from year to year but never completely disappears. A permanent tongue of polar pack ice west of the Area prevents direct access to the Greenland coast from the Area throughout the year. The ice-free waters of the Area afford the shortest shipping route from European Russia to the North American continent. The eastern end of the important North Sea route to the Barents Sea, although ice-free on the average only from late June into late October, is via the Baltic-White Sea Canal. In no portion of the Area does the surface water reach a temperature at which an individual can be considered reasonably safe from the effects of cold water--survival times are exceedingly limited. Tides are principally semidiurnal, with the progression generally northward in the Norwegian and Greenland Seas and eastward in the Barents Sea. Spring tide ranges are greatest along the Norwegian and Russian coasts, the maximum range of 28 feet occurring at the mouth of Russia's Mezen' River in the White Sea. Tidal currents may reach speeds of 3.5 knots in places along the Norwegian and Russian coasts and present difficulties to navigation. The most direct great circle air routes between Russia and North America cross the Area.

The Area's western mainland coast eastward to Cape Svyatoy at about 40° longitude is elevated with abrupt shores. East of Kanin Peninsula the Russian coast within the Area is lowlying, with a number of shallow bays and inlets. The bleak coasts of the various archipelagoes are steep and high; glaciers frequently plunge down to the sea and moraines (glacier-carried debris) accumulate in the hollows.

General Circulation and Climate

The climate of the Area is influenced throughout the year by seasonal variations in three polar air masses and their associated wind regimes and intervening zones of interaction--the Arctic air with polar easterlies to the north, the Eurasian continental air and Atlantic maritime air with mid-latitude prevailing westerlies to the south, and the Arctic front embedded in zones of relatively low pressure located between the cold Arctic and milder maritime air. Other controls on the climate of the Area include the decrease in solar insolation in polar regions compared to that in the regions of the westerlies to the south, relatively stable climate over the ice-covered Arctic Seas, seasonally variable climate over the Eurasian continent, warm and cold ocean currents, and ice-free waters. The combined influences produce a climate within the Area ranging from polar in the northern portion to near temperate in the southwest. The polar regime is typified by generally persistent but weak polar easterlies and relatively fair weather associated with high pressure. The southern portion is typified by relatively intense but variable westerlies associated with migratory extratropical cyclones originating west of the Area and moving through the Area along the Arctic front. Continental influence is present along the Eurasian coast. The result is a bleak climate with low air and water temperatures, fog, ice, rough seas, and sudden and long continuous storms. Figure 3 shows the mean sea-level pressure distribution in January and July for the area 30-80N, 20W-90E.

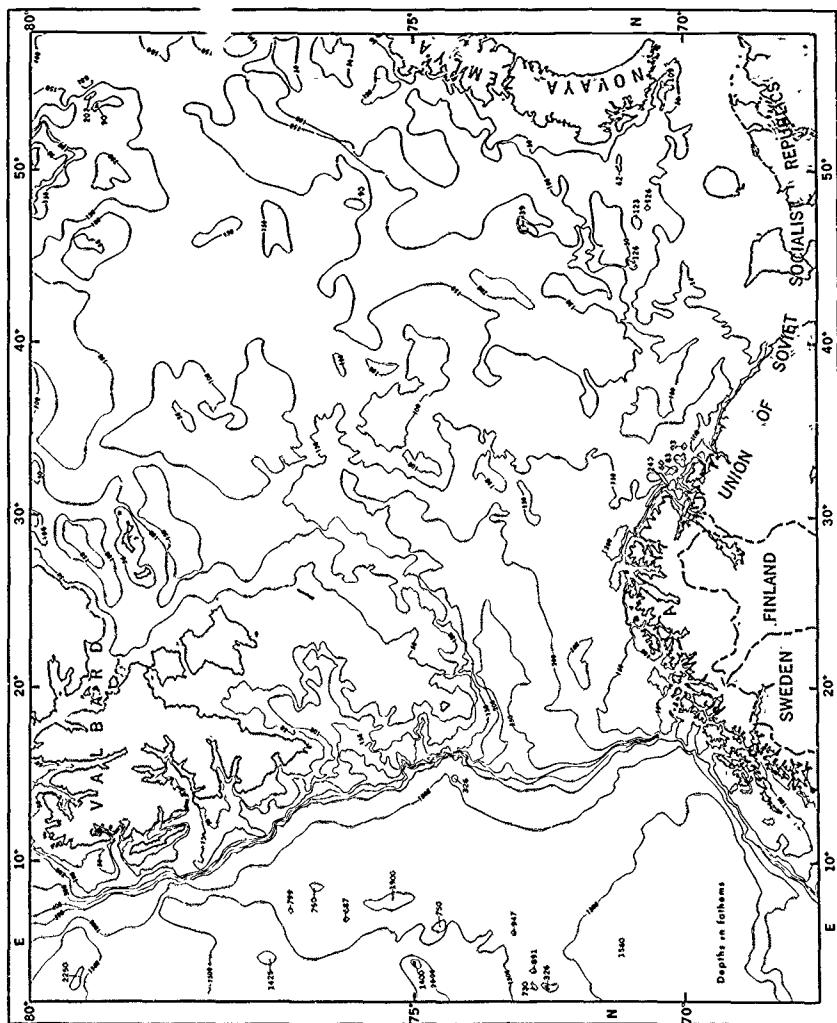


FIGURE 2. BATHYMETRY CHART

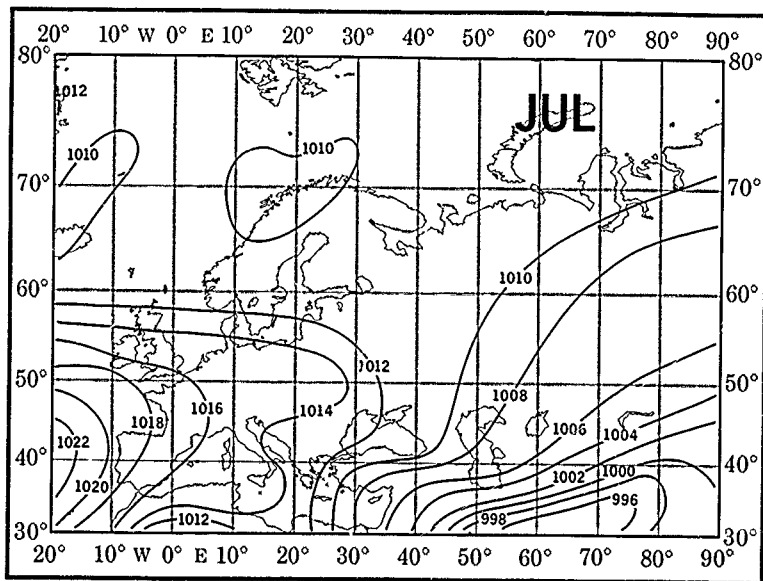
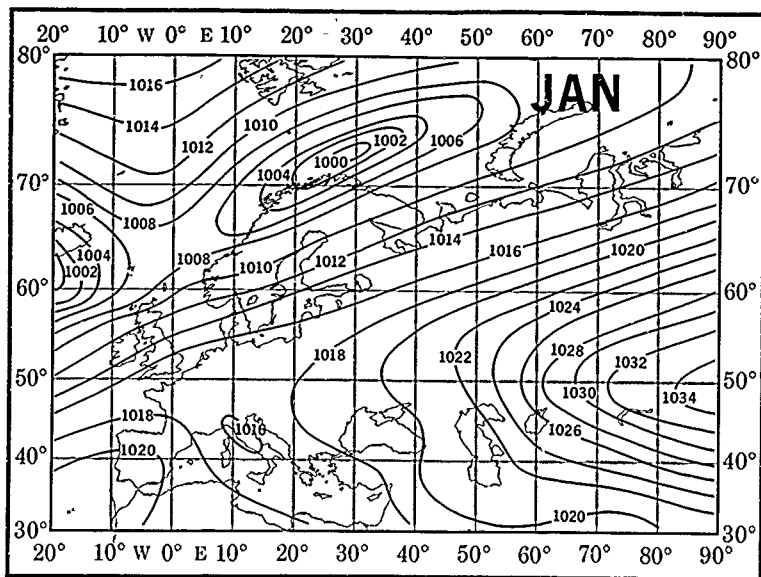


FIGURE 3. JANUARY AND JULY MEAN SEA-LEVEL PRESSURE

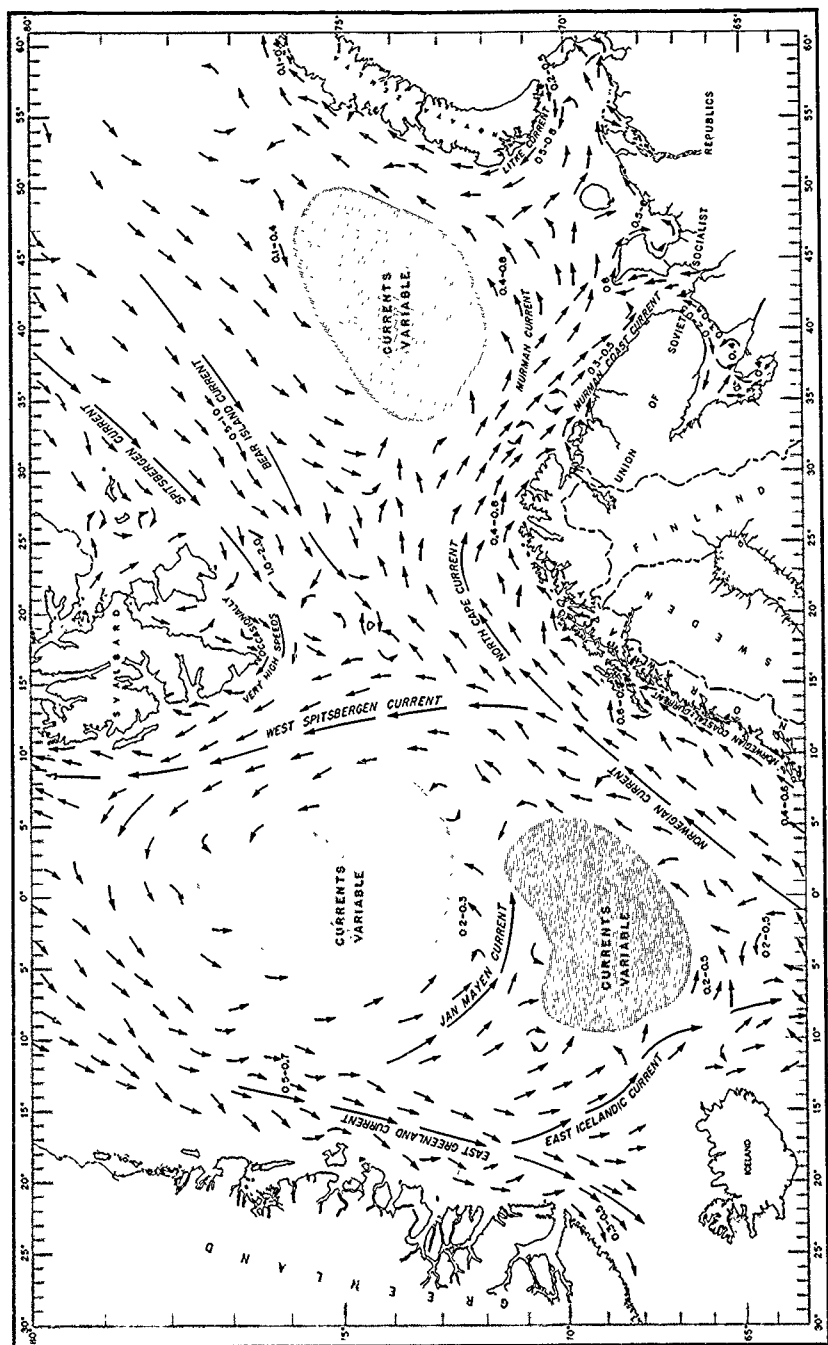
Both the Arctic and Eurasian continental polar air masses, which develop over surface ice and snow, are highly stable and typified by intense cold, and relatively dry, fair weather associated with high pressure. The continental high is most intense during winter and the Arctic front is well defined and in general extends eastward within the Area from Bear Island to the northern tip of Novaya Zemlya. In summer, an increase in insolation and the consequent surface heating on the Eurasian continent result in relatively low pressure and, as the Arctic high expands, the Arctic front becomes diffuse and is generally found to the south along the Russian coast. The northwestern tongue of the relatively warm Atlantic polar maritime air mass, which is actually returning Arctic or polar continental air modified by passage over water, continually influences the Area's southwestern waters and coastal regions of Norway and western Russia. The Arctic front, a semi-permanent, semi-continuous front, extends in a northeasterly direction from the deep semi-permanent Icelandic Low south of Iceland across the Barents Sea and beyond. Winter storms, which grow along the front, move generally from Iceland along northern Norway to the Barents Sea and, on occasion, continue eastward along the north coast of Siberia. Cyclonic intensity is greatest in the Norwegian Sea, decreasing along the axis of the pressure trough eastward to Novaya Zemlya. A vigorous variation in weather associated with the frequent passage of cyclonic depressions along the front is typified by increased wind speed, cloudiness, precipitation and, in ice-free waters, sea state.

Although air masses and the intervening zones of interaction are significant in determining the climate of the Area, the path and age of the air mass, as well as the nature of the source, govern its characteristics. Also important, because of its effect on stability, is the contrast in temperature between the air mass and the surface over which it travels. The most pronounced variation of these factors occurs between winter and summer; the intervening seasons are transitional. Long periods of severe cold and the high percentage of snow result from frequent outbreaks of extremely cold air from the north. The relatively high temperature, persistent cloudiness, strong winds, fog, and fairly frequent precipitation can be attributed to the invasion of warm, moist air from southerly sources. This vigorous variation is a response to the frequent passage of cyclonic depressions along the Arctic front.

Two Arctic air masses originating during winter over ice in high latitudes having almost complete lack of insolation make up the very cold air to the north of the Arctic front. The Greenland/Polar Basin air quickly becomes modified to Arctic maritime air as it moves southward over relatively warm waters and only fresh outbreaks over these waters result in unusual instability. Severe turbulence and showery precipitation of cold rain or snow are associated with such southward air mass displacements. The second air mass, which originates over Novaya Zemlya/Polar Basin northeast of the Area, undergoes relatively little modification as it moves southward over the underlying ice pack, and such storms are generally considered the most severe type along the Arctic front. Generally, less variation in air masses is experienced during the short summer period when a flat and less extensive pressure field and fewer intense depressions result in a weak circulation pattern. Also the distinction between polar maritime and Arctic air becomes less pronounced because, under the influence of almost continuous insolation, their source regions become fairly uniformly mild, humid, and semi-maritime. Air masses formed over the Arctic pack ice, however, retain their extreme winter characteristics which contrast sharply with the warmer and more moist air from the southwest.

The Arctic pack ice plays an important role all year in the climate of the Area. Although heat is conducted through the ice from the relatively warm waters beneath, this ice-covered region acts very much like a large landmass in winter. During outbreaks of cold, dry Arctic air, the pack ice helps to maintain the original characteristics of the Arctic air as it travels over the ice. Weather is generally fair and clear and very cold. However, when maritime air is advected over the pack ice, widespread regions of fog and low clouds are quickly formed.

The maritime regions south of the ice limits exhibit seasonal moderation, whereas the continental regions south of the Area cause extreme seasonal variability off the coasts of Eurasia. Along the Norwegian and Russian coasts, where the continental effect is present, mean temperatures are slightly higher in summer and lower in winter than in the region of westerlies to the north. In summer, when the continent of Asia becomes a warm source, air masses invading from the southeast become stable over the relatively cold water. Polar continental air quickly becomes modified into polar maritime air after passing over the ice-free waters for two or three days. The southeast Barents Sea and White Sea area also come under the influence of rather intense low pressure systems forming on the polar front over northwest Europe during the warmer months.



isopleths are presented: the scalar mean speed and the percent frequency of winds less than 11 knots, from 11 to 21 knots, from 22 to 33 knots, and greater than or equal to 34 knots. Also given are wind roses for 1° latitude by 2° longitude quadrangles.

Visibility

Visibilities are difficult to measure at sea because of the lack of distance reference points. Climatically, many low visibility observations are probably missed because the observer is too busy with other duties (a contrasting form of fair weather bias). However, the coarseness of visibility (code) intervals helps to minimize the problem, thereby permitting the summarized data to be relatively consistent.

Clouds

A survey of the cloud data (total and low cloud amount) from the surface marine observations data base shows that the number of total cloud reports are significantly greater than that of low cloud amounts. This is because many of the early marine observations contain only total cloud amount. For the two presentations (total cloud amount $\leq 2/8$, and low cloud amount $\geq 5/8$), only those observations reporting both total and low cloud amounts were summarized. This helps eliminate problems introduced as a result of different size data sets (N-count). The use of satellite data helps to bolster confidence in the total cloud analyses because they show fairly close agreement with those observed on the surface (U.S. Department of Commerce and United States Air Force, 1971).

Ceiling and Visibility

Aircraft-type ceilings are not available from marine observations. The ceilings are estimated from the height of the lowest cloud when low clouds cover more than half the sky. When the sky is totally obscured by rain, fog, dust, or other phenomena, the total obscuration is considered a ceiling with a height of zero. Mid-range ceiling and visibility charts (ceiling less than 1000 feet and/or visibility less than 5 nautical miles; ceiling less than 8000 feet and/or visibility less than 10 nautical miles) and low-range ceiling and visibility charts (ceiling less than 300 feet and/or visibility less than 1 nautical mile; ceiling less than 600 feet and/or visibility less than 2 nautical miles) are presented.

Wave-Heights

Wave-heights have been recorded in consistent quantitative code since the late 1940s. The reluctance of many observers to take wave observations in the earlier years and the difficulty in estimating waves, especially in confused seas, make wave observations one of the least commonly observed elements. The observations are also subject to biases. Generally, the heights are too low, the periods too short, and the sea-swell discrimination poor (Quayle, 1980). The data in this study have not been adjusted for the suspected biases, but were processed through a quality control procedure wherein an internal check was made between wind speed and sea height. The data were also matrix-arrayed and apparent erroneous outlier data values were deleted from both the sea and swell data. Wave-height presentations include isopleth maps showing percent frequencies of wave-heights ≥ 3 feet and ≥ 8 feet. In addition, wave-height tables by quadrangle show frequencies by six wave-height categories. In these presentations, the higher of the sea or swell was selected for summarization. If heights are equal, the wave with the longer period was selected.

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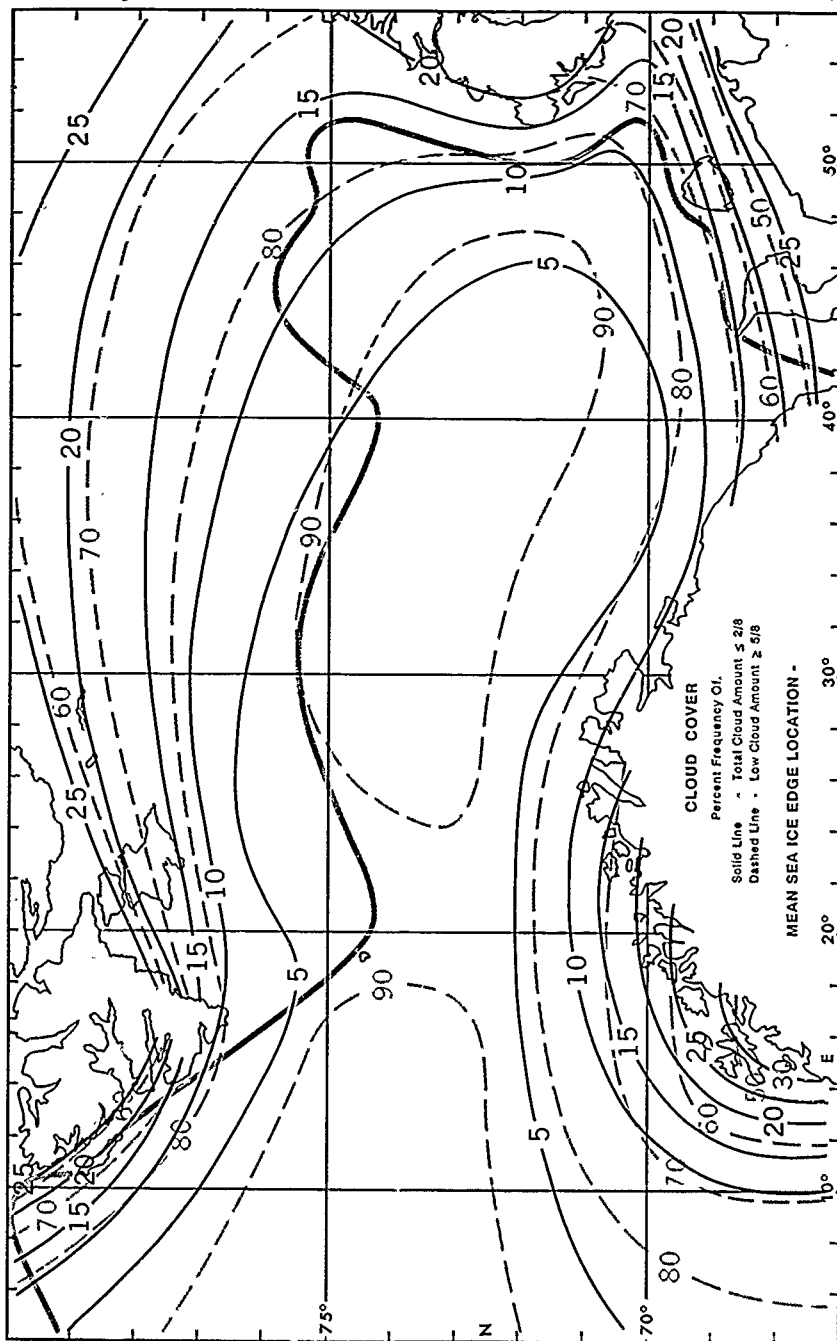
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* Mean ice edge location is shown on all isopleth charts.

January

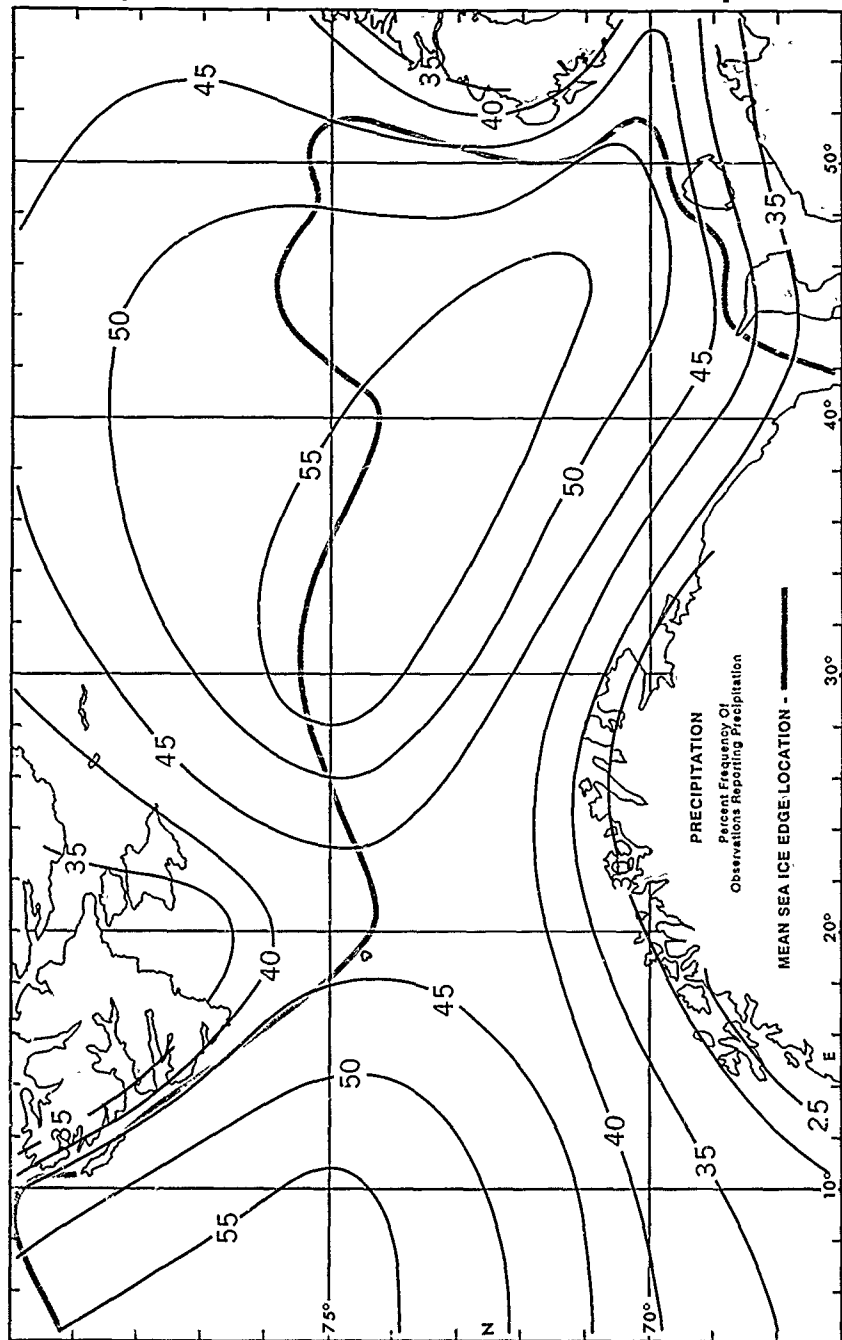
Clouds



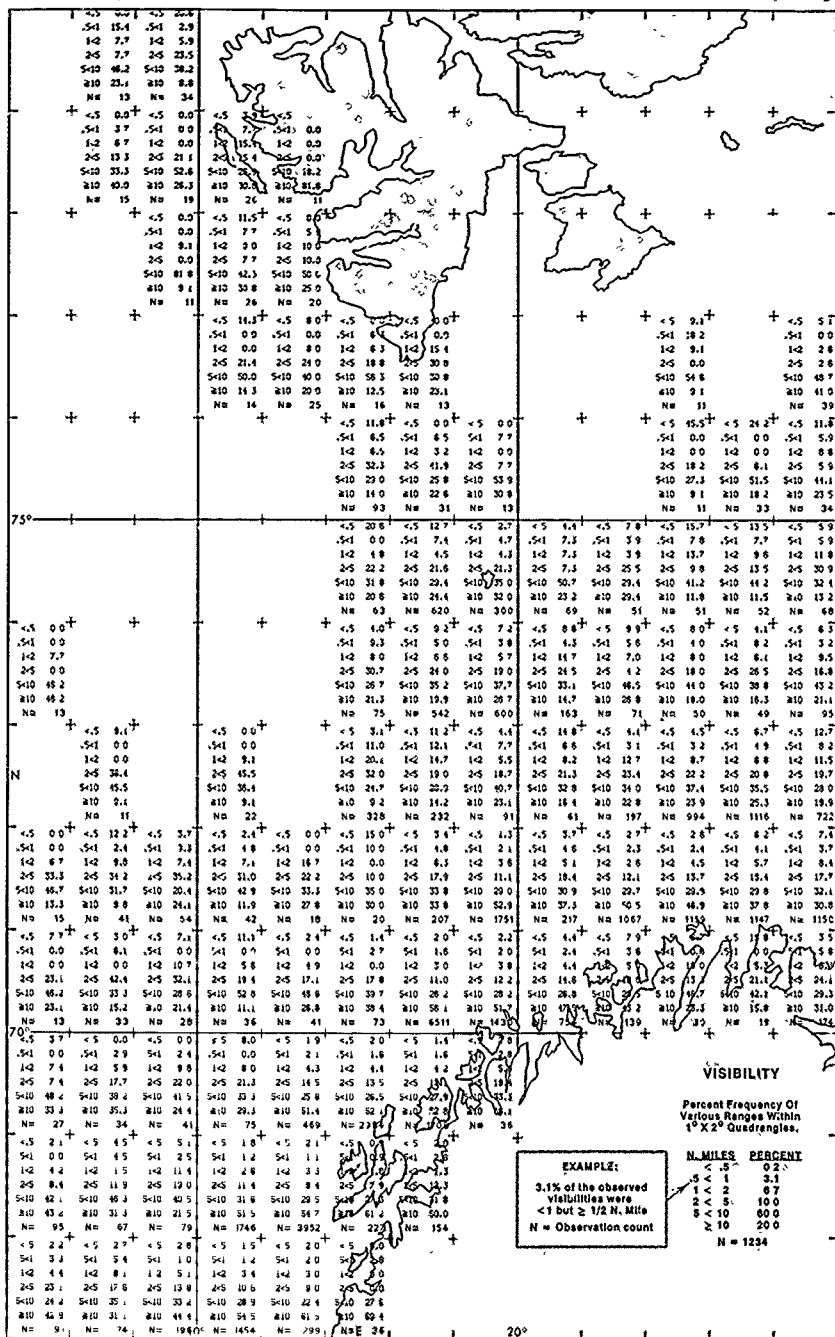
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

January

Precipitation

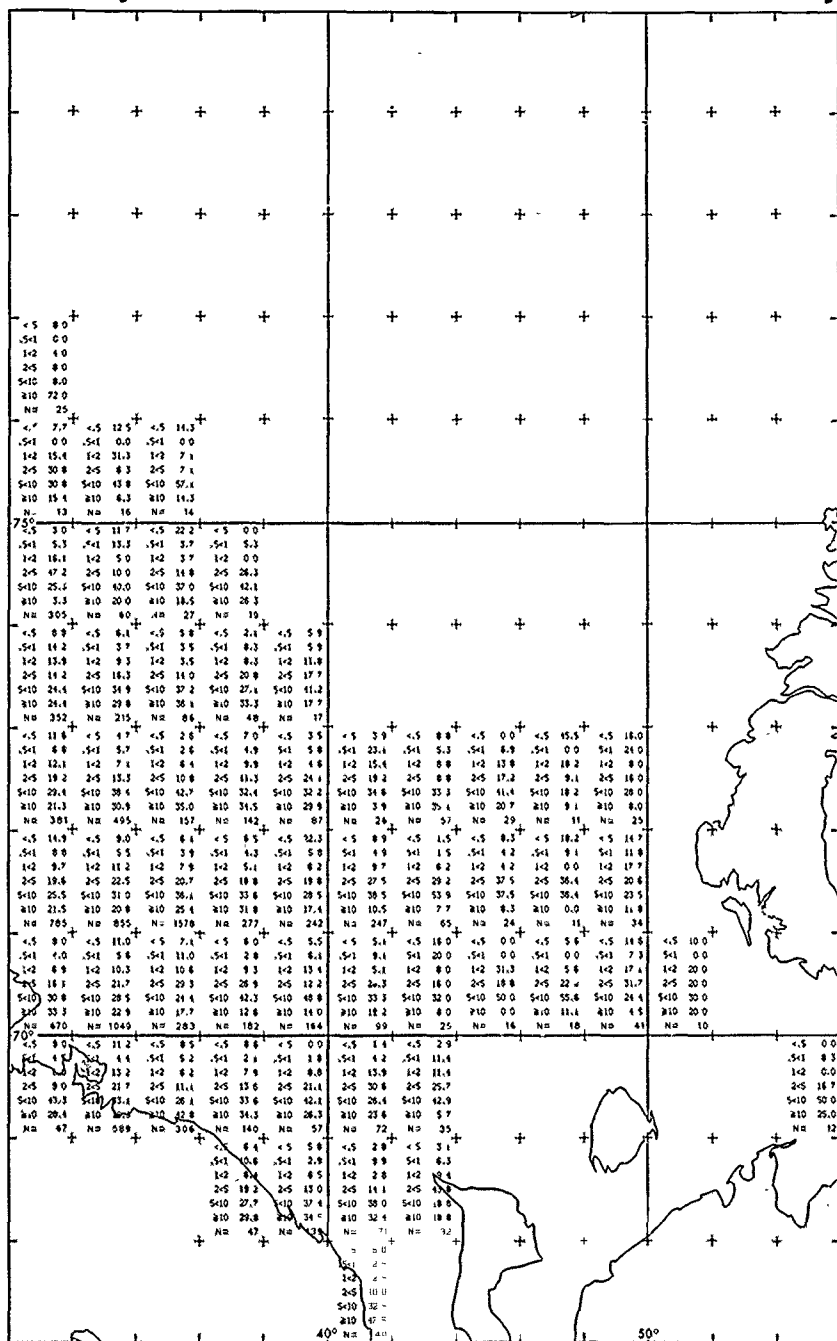


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts



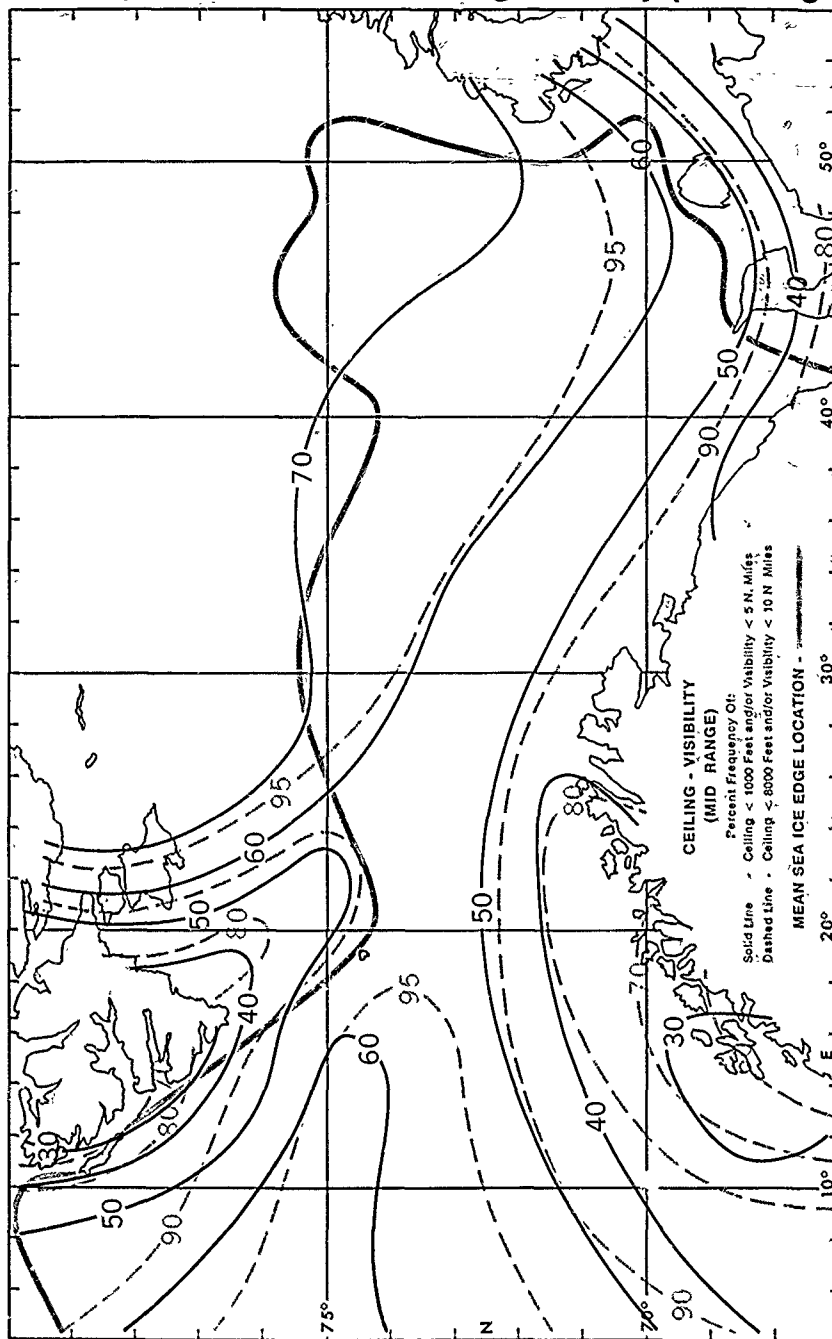
January

Visibility



January

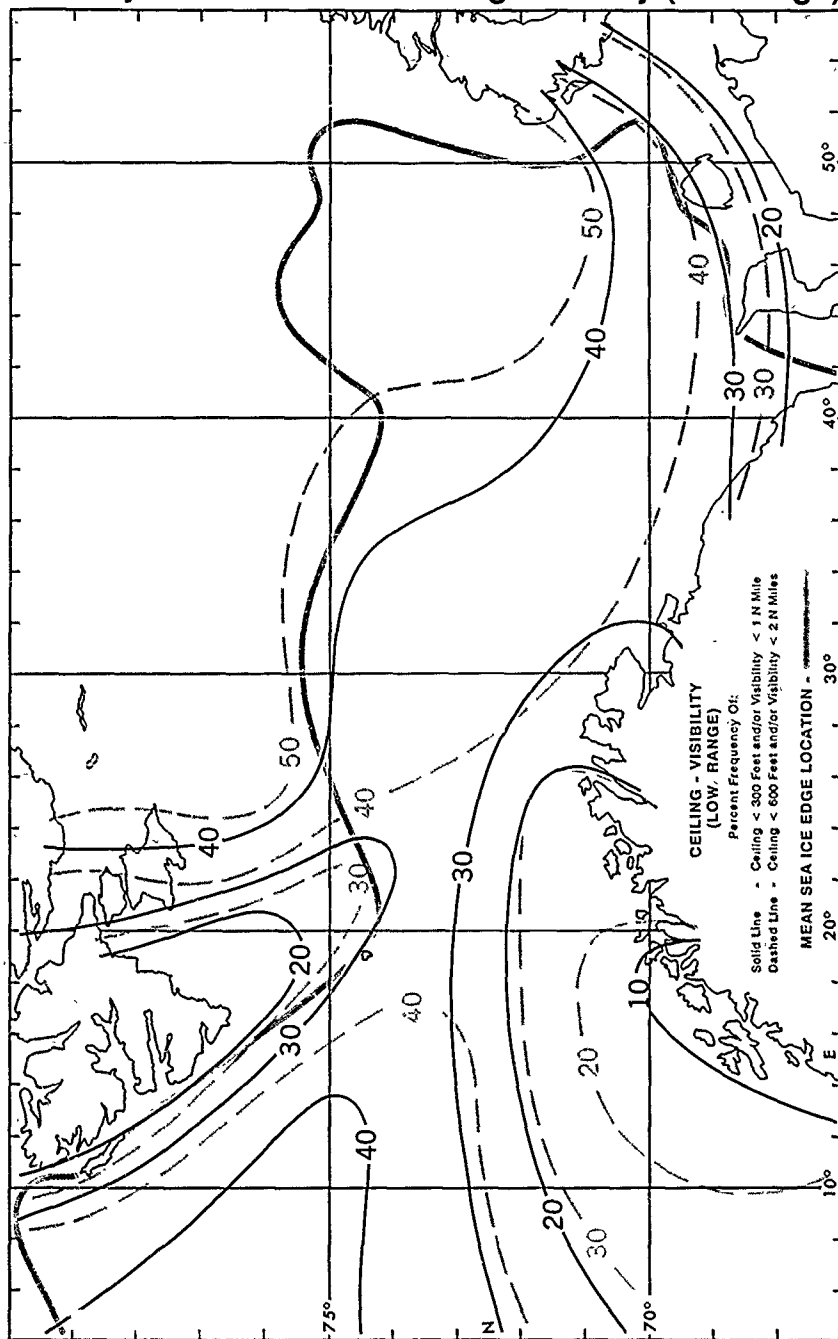
Ceiling-Visibility (mid range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

January

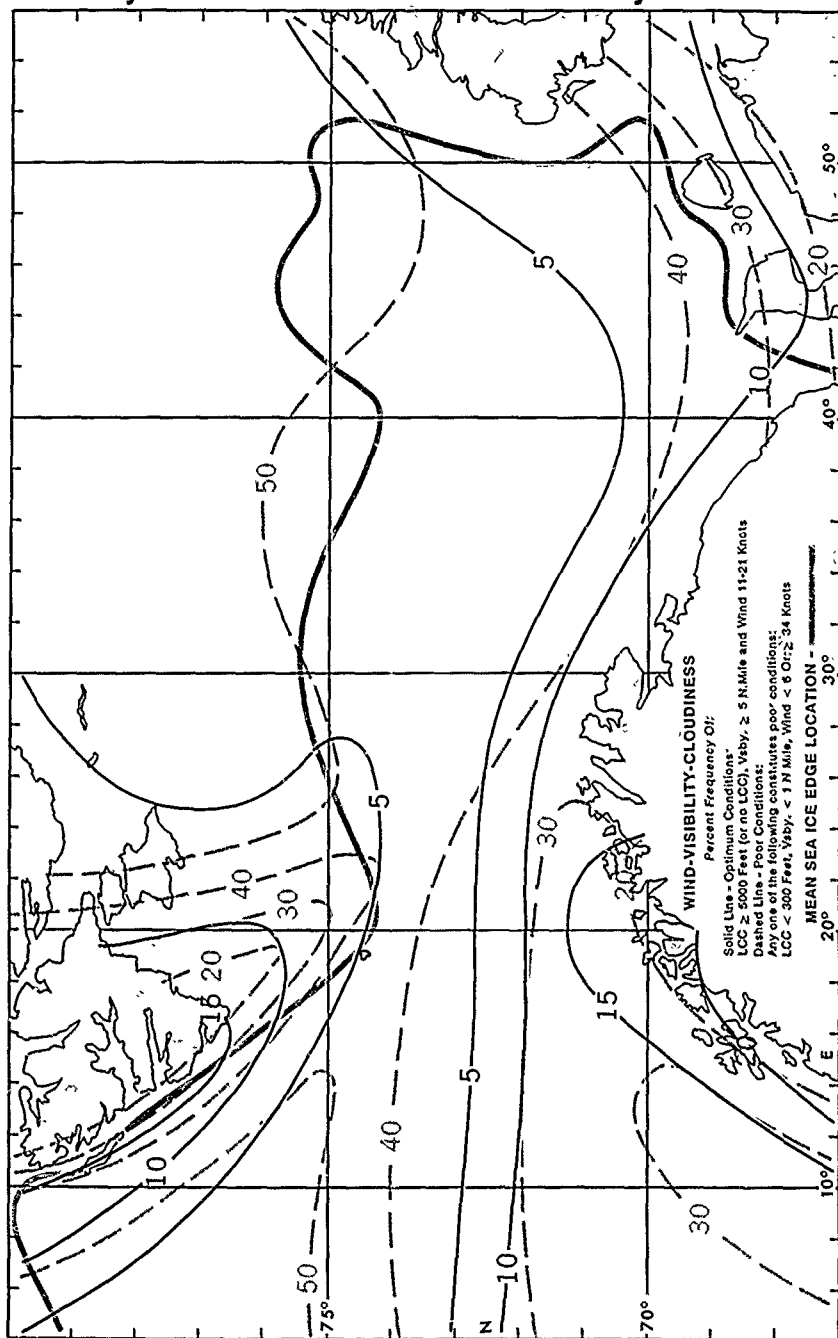
Ceiling-Visibility (low range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

January

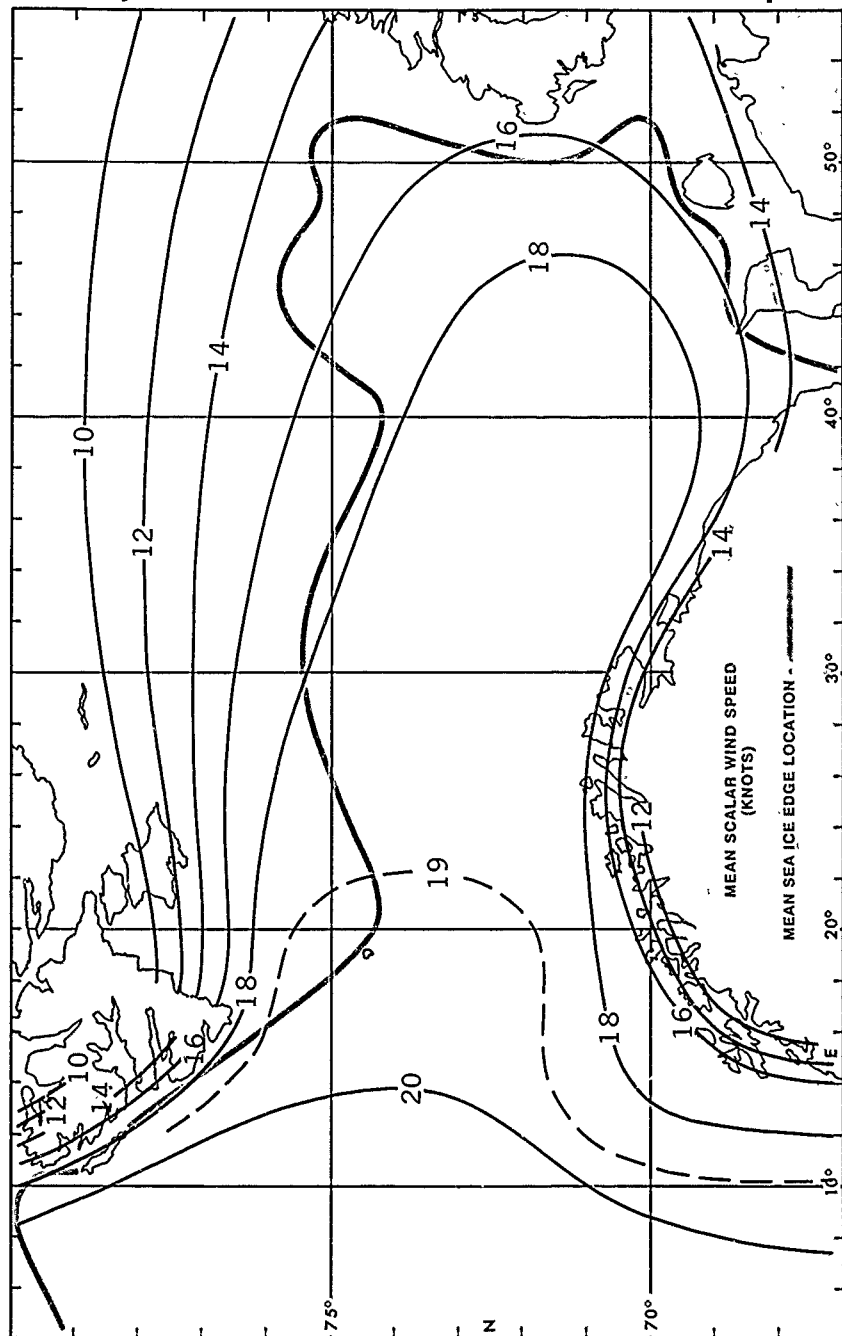
Wind-Visibility-Cloudiness



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

January

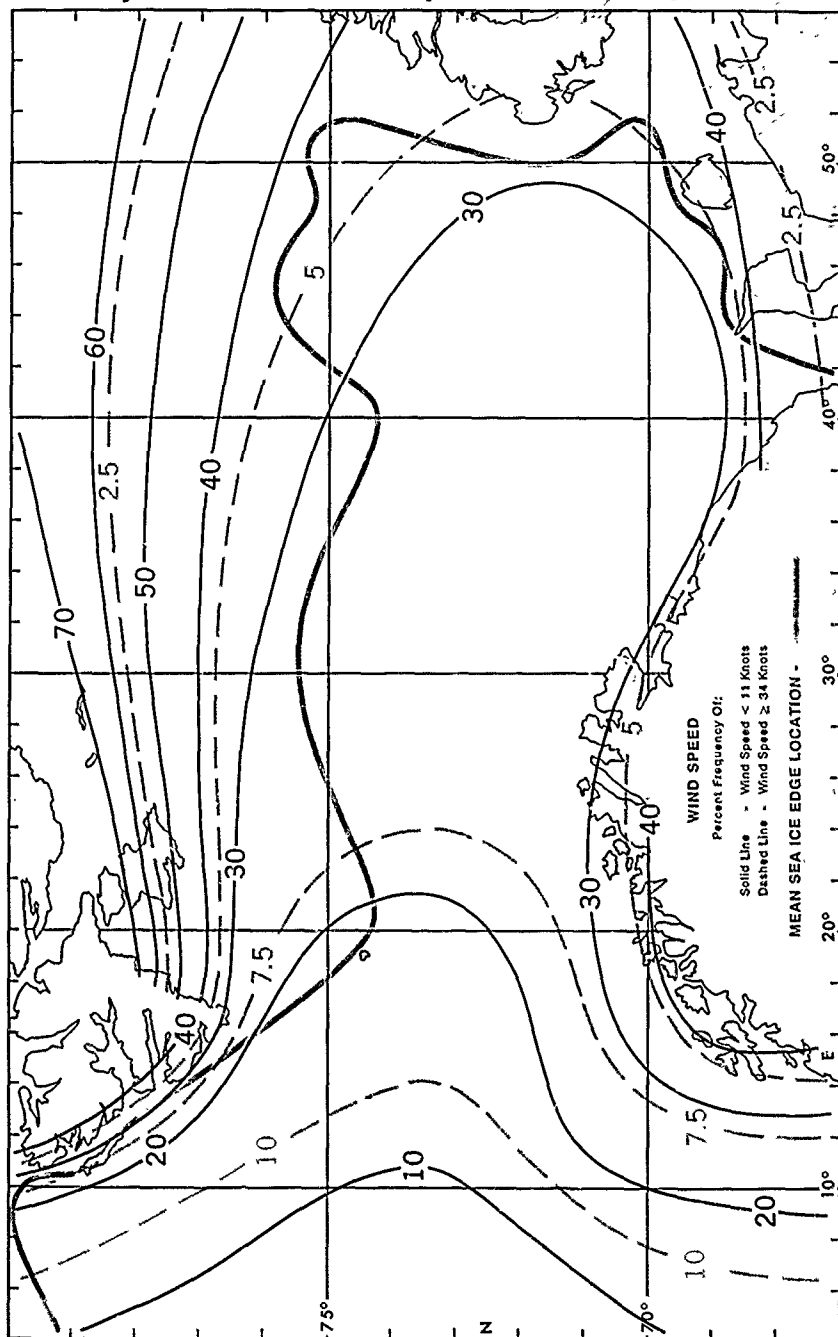
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

January

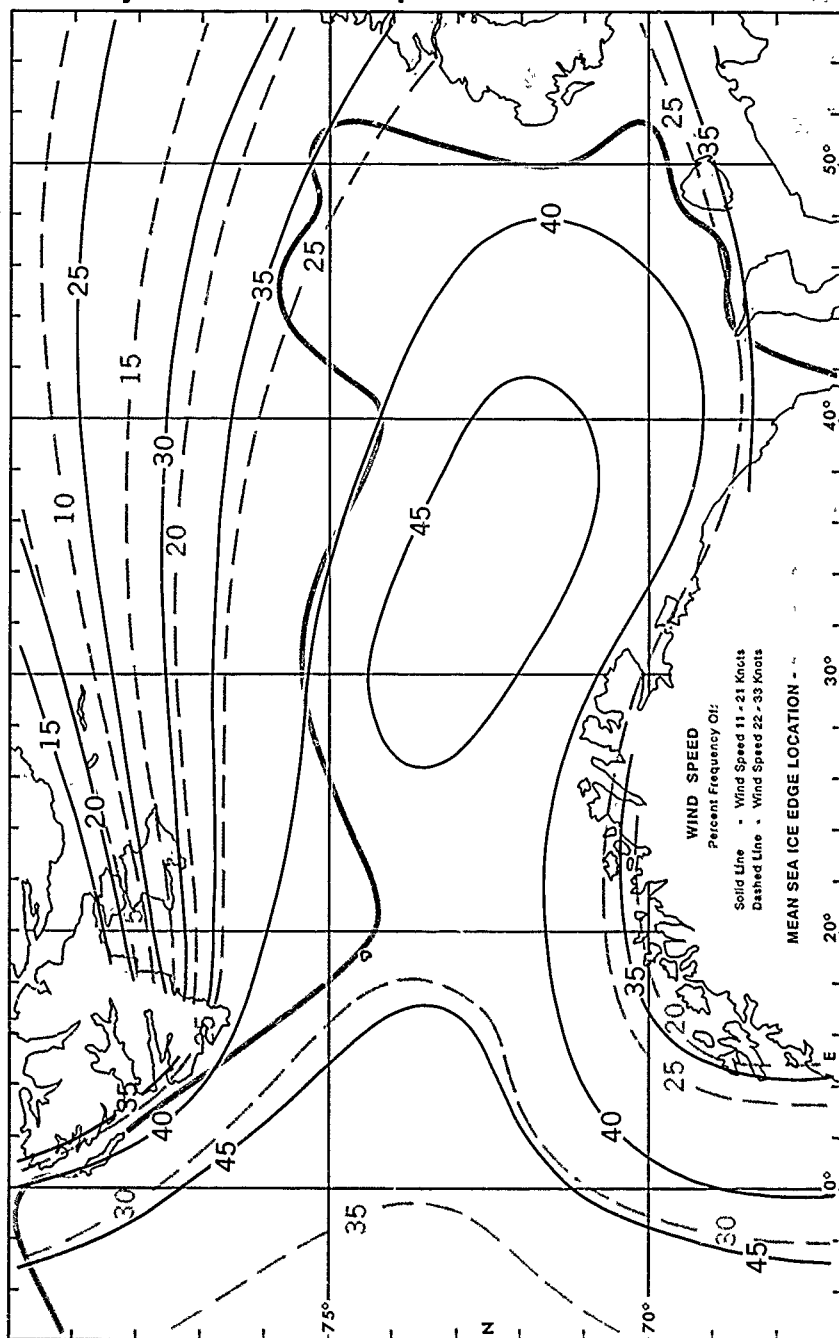
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

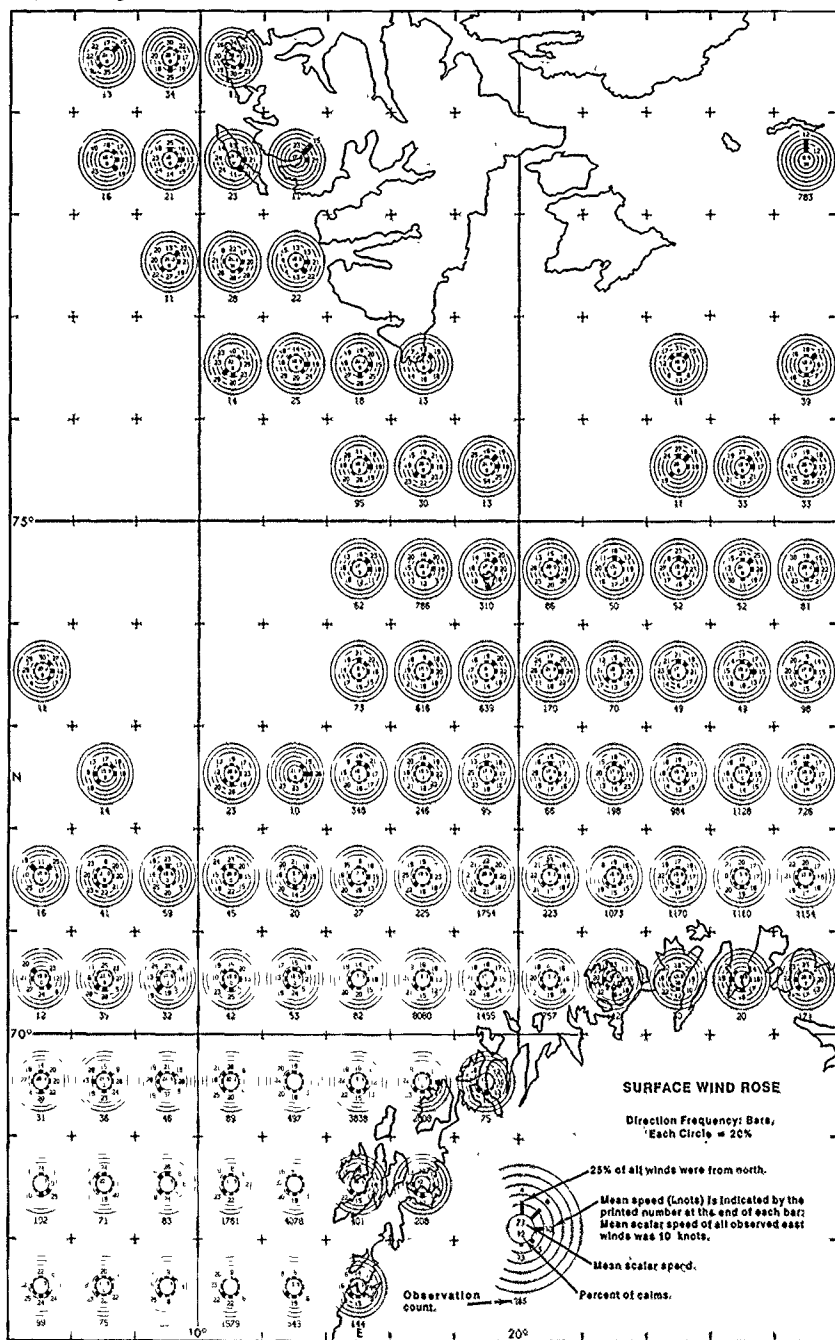
January

Wind Speed 11-21 and 22-33 Knots



Surface Wind Roses

Surface Wind Roses



Surface Wind Roses



**Direction Frequency: Bars,
Each Circle = 20%**

25% of all winds were from north.

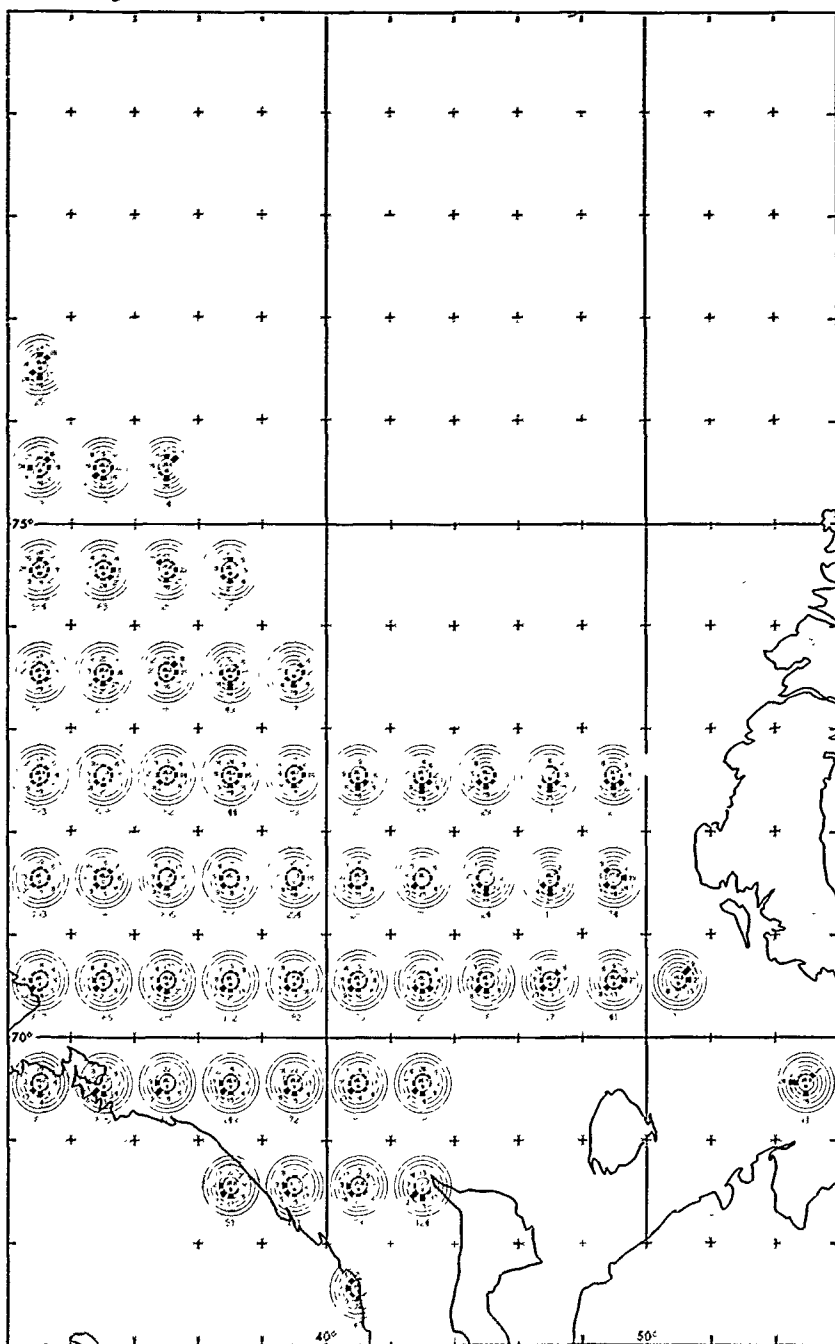
Mean speed (knots) is indicated by the printed number at the end of each bar. Mean scalar speed of all observed east winds was 10 knots.

Mean scalar speed
Percent of calms.

Observation
count.

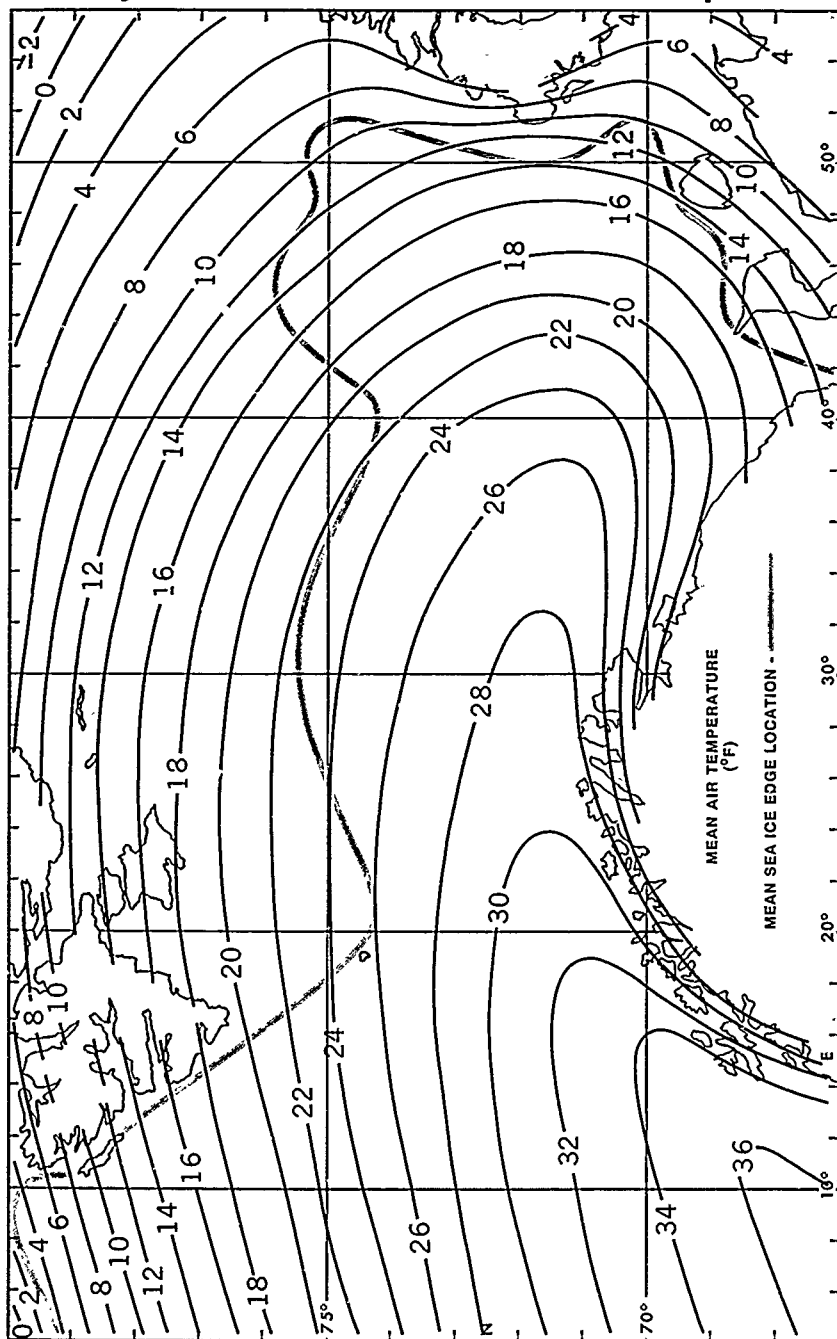
January

Surface Wind Roses



January

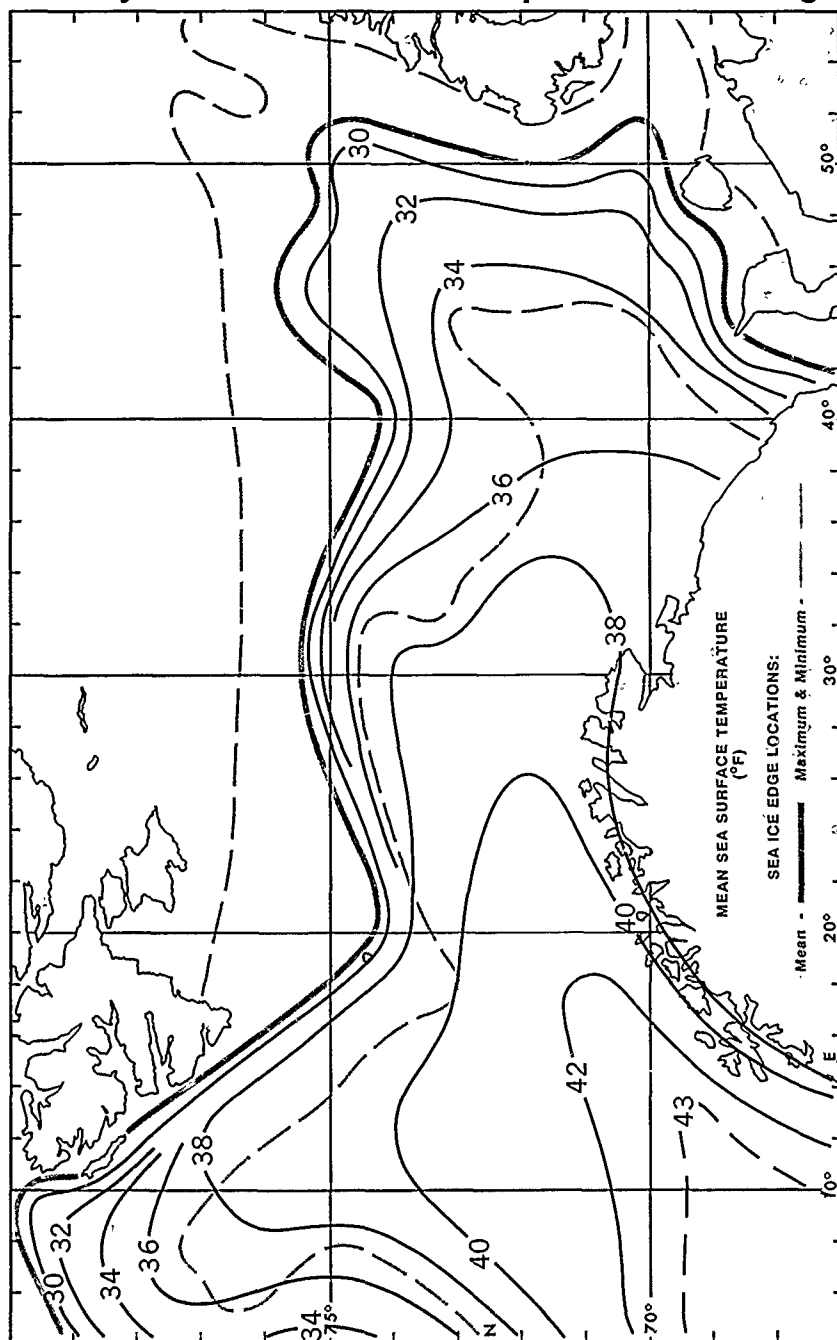
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

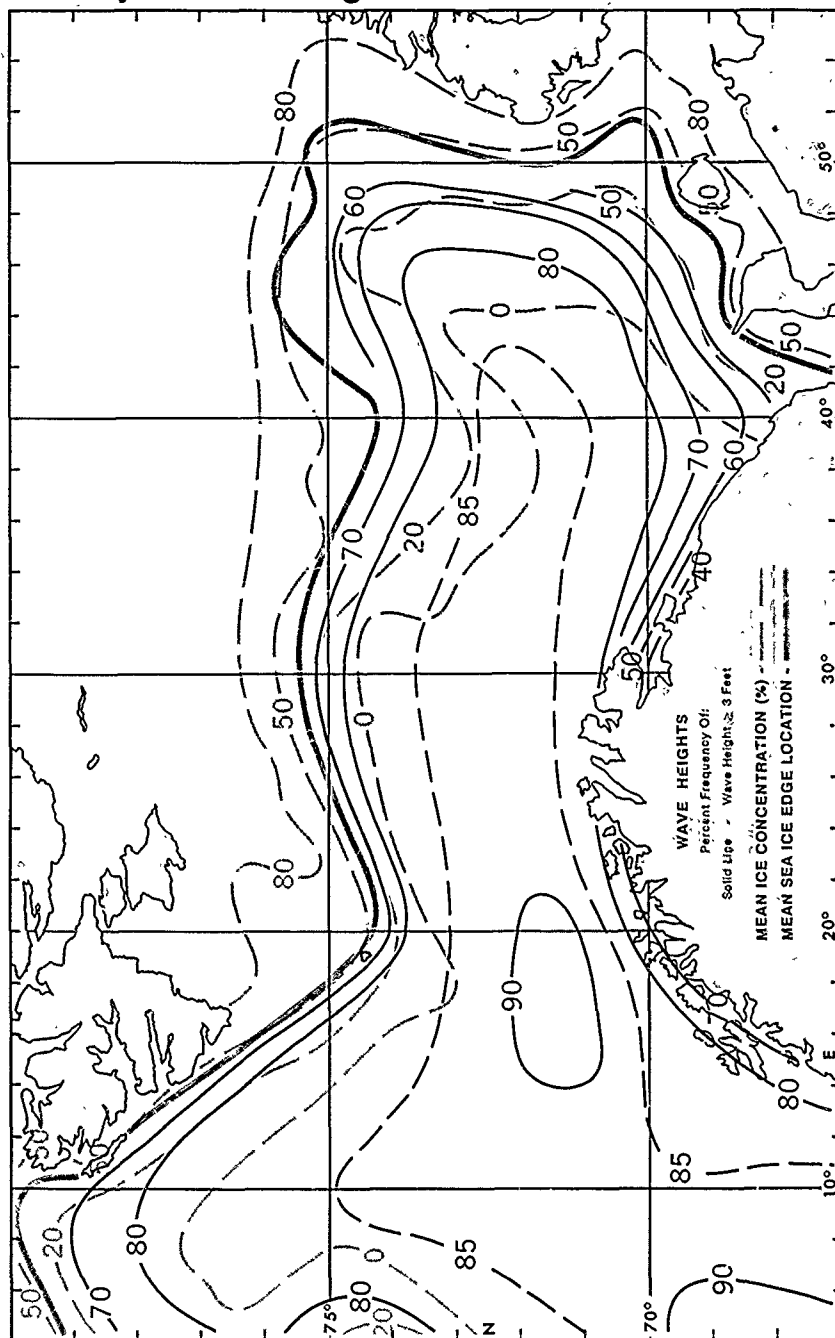
January

Mean Sea Temperature & Ice Edge

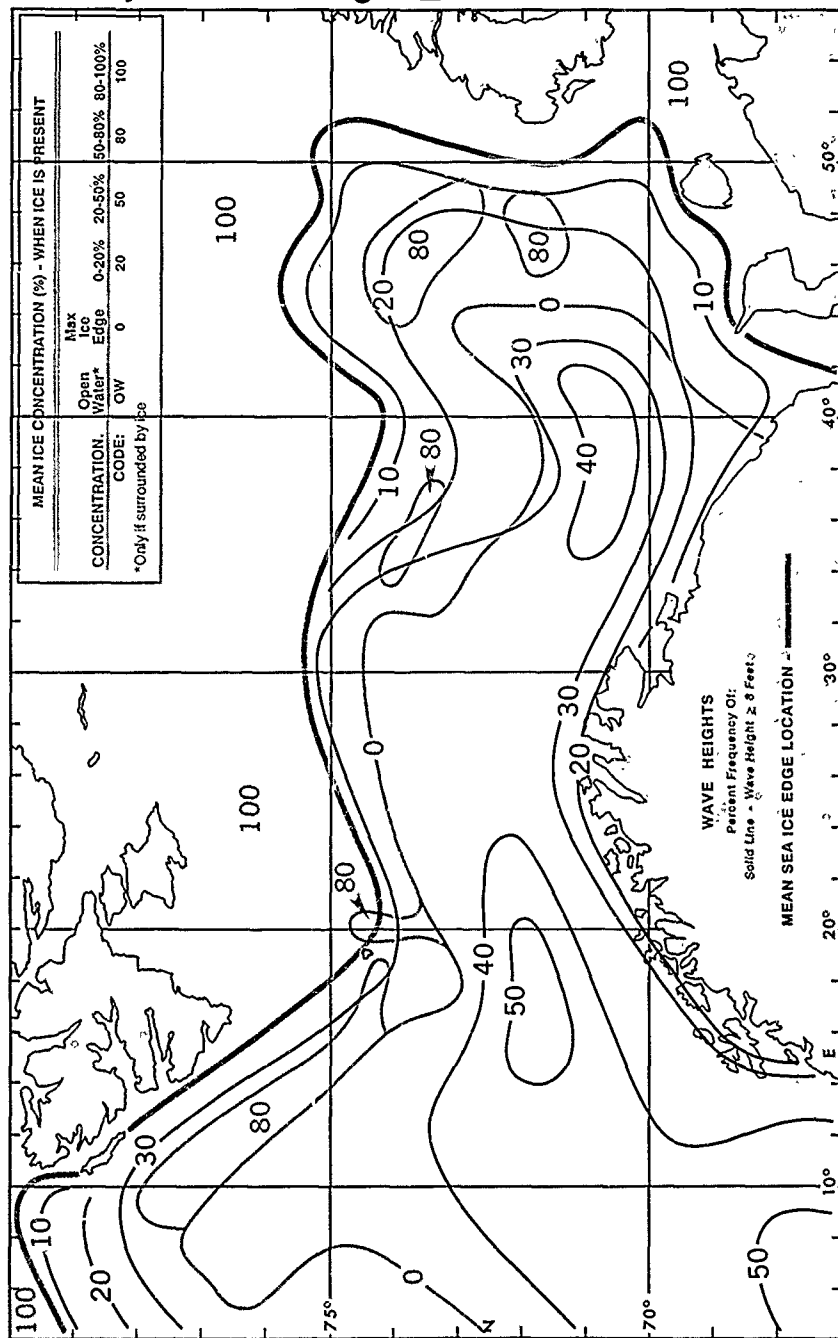


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

January Wave Height ≥ 3 Ft. & Ice Concentration



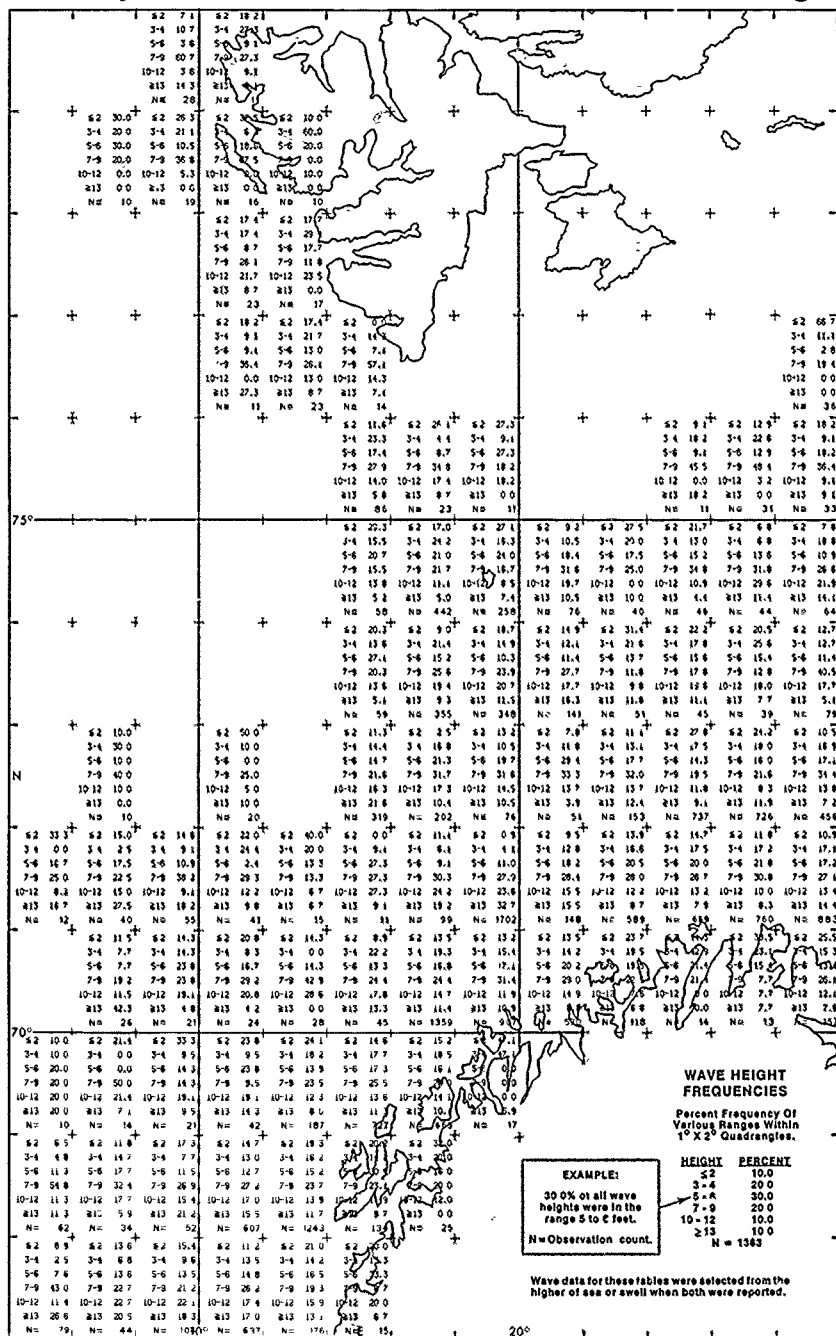
January

Wave Height ≥ 8 Ft. & Ice Concentration

NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts

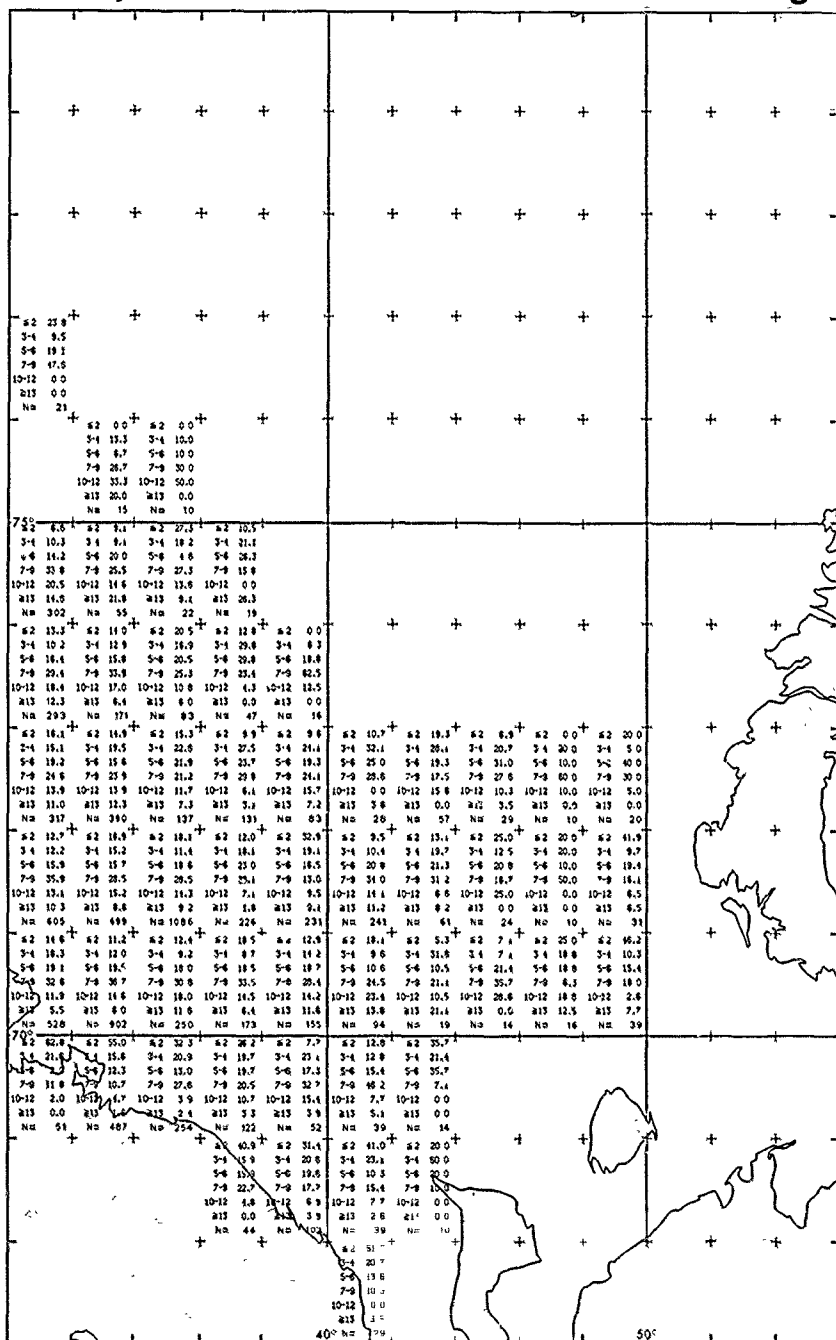
January

Wave Height



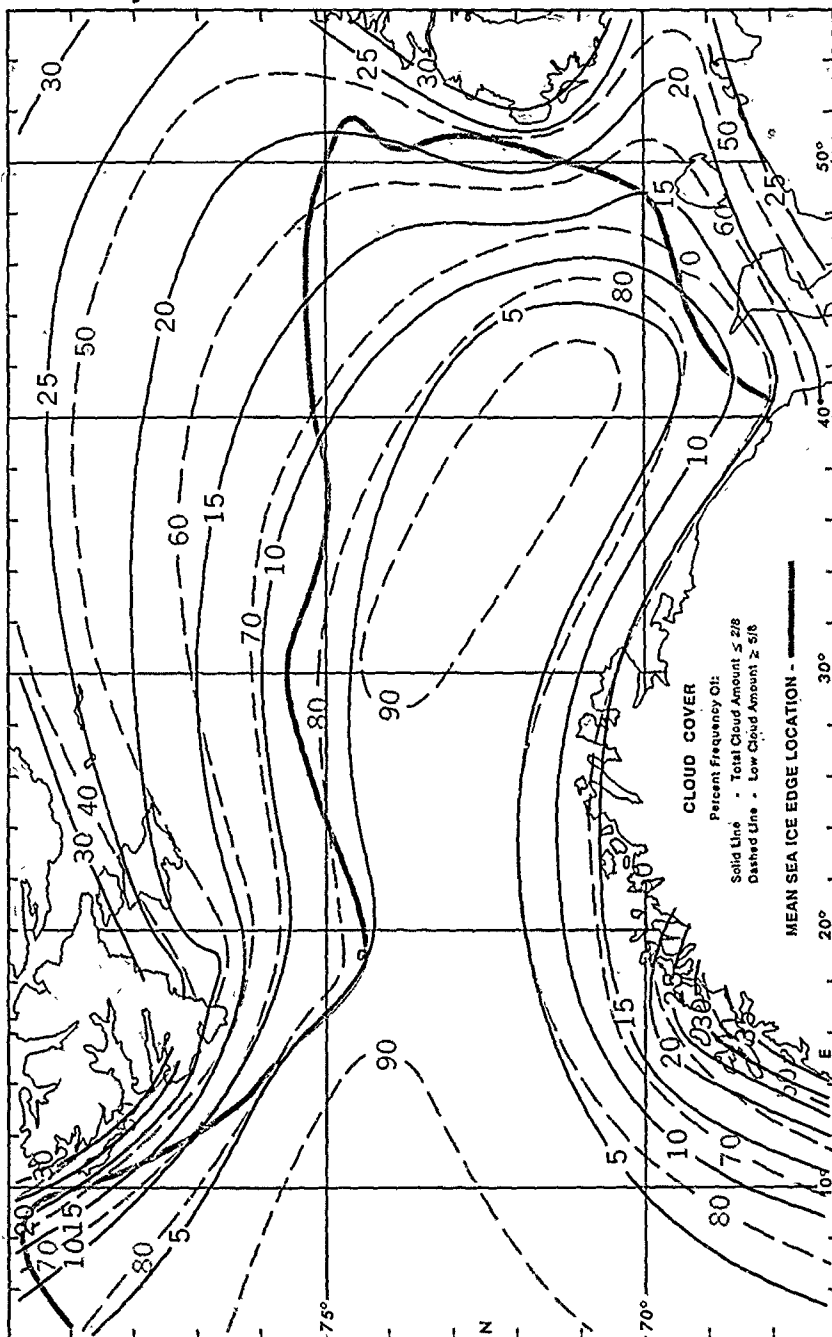
January

Wave Height



February

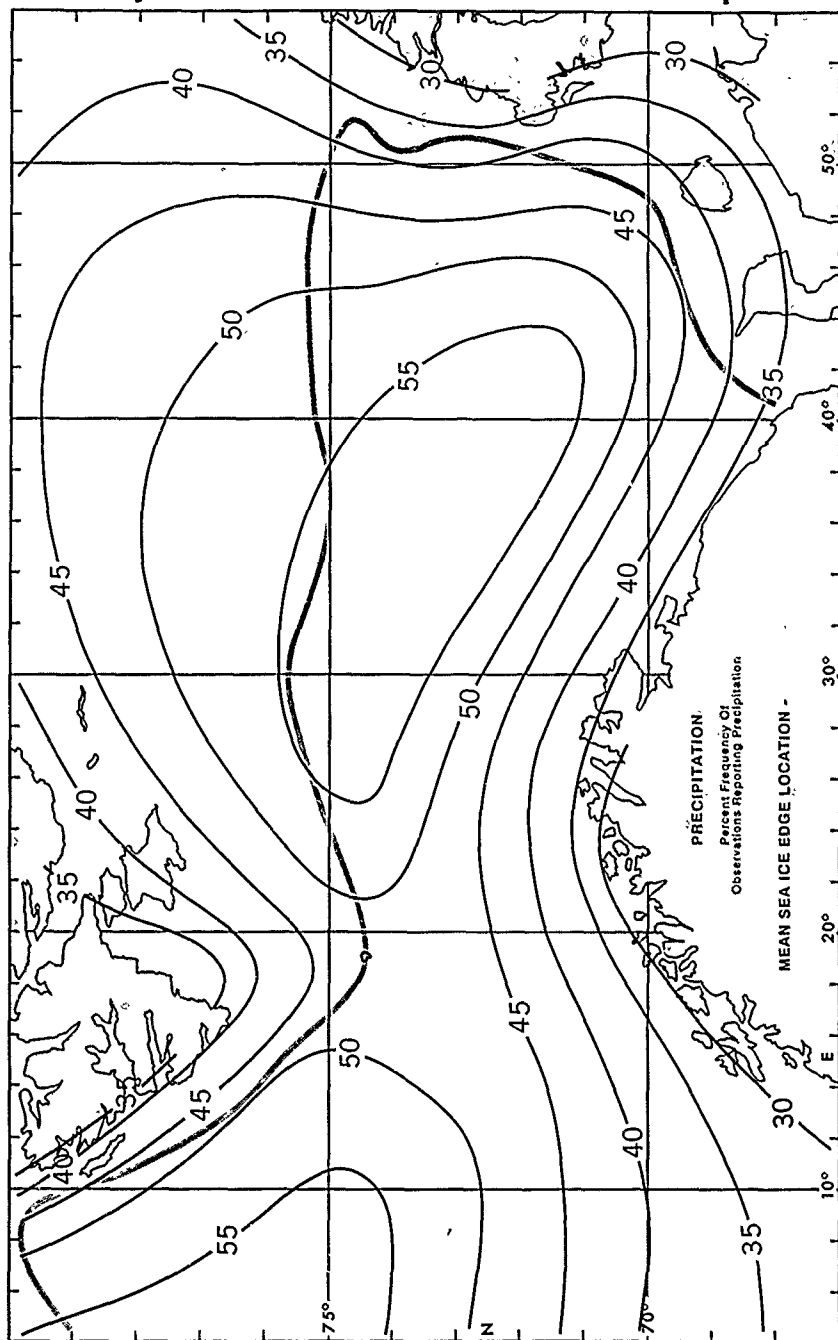
Clouds



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

February

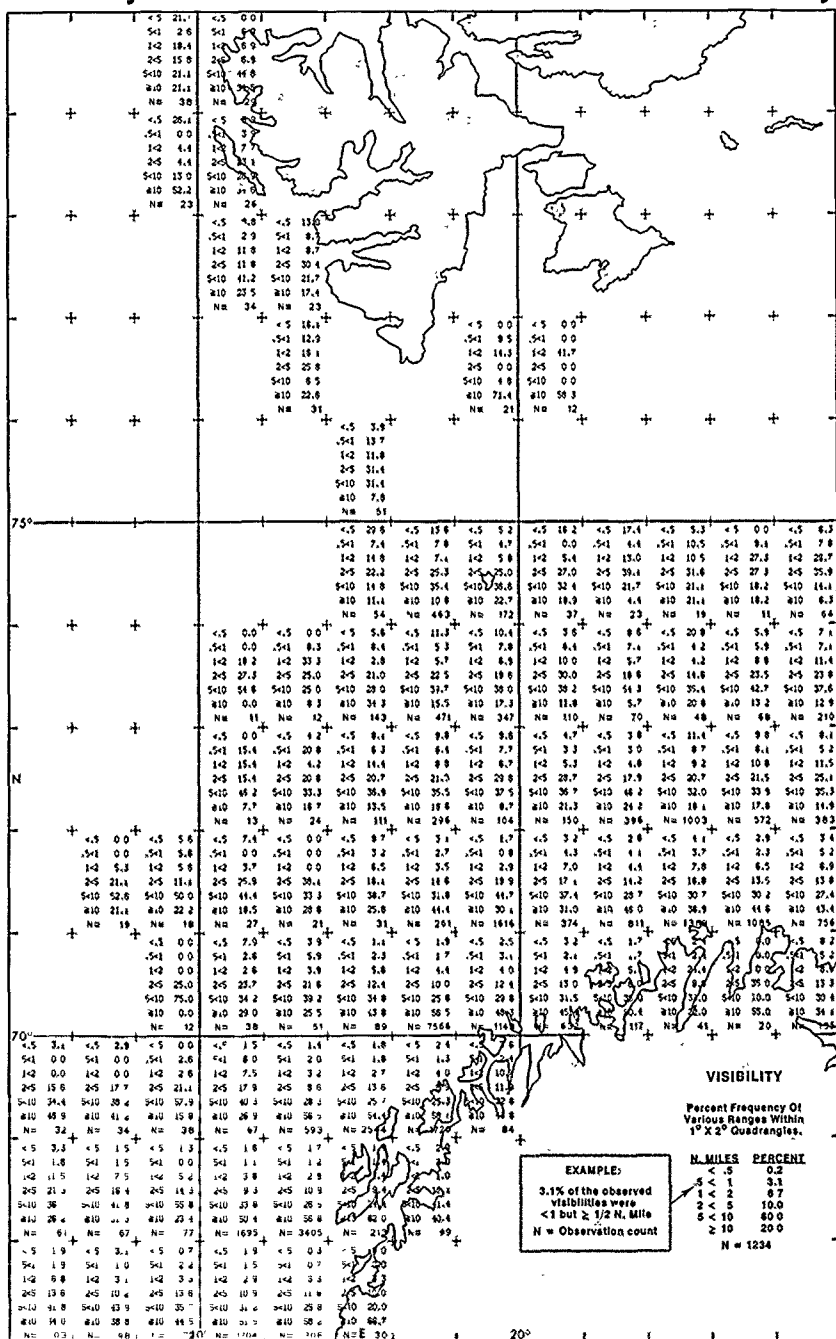
Precipitation



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

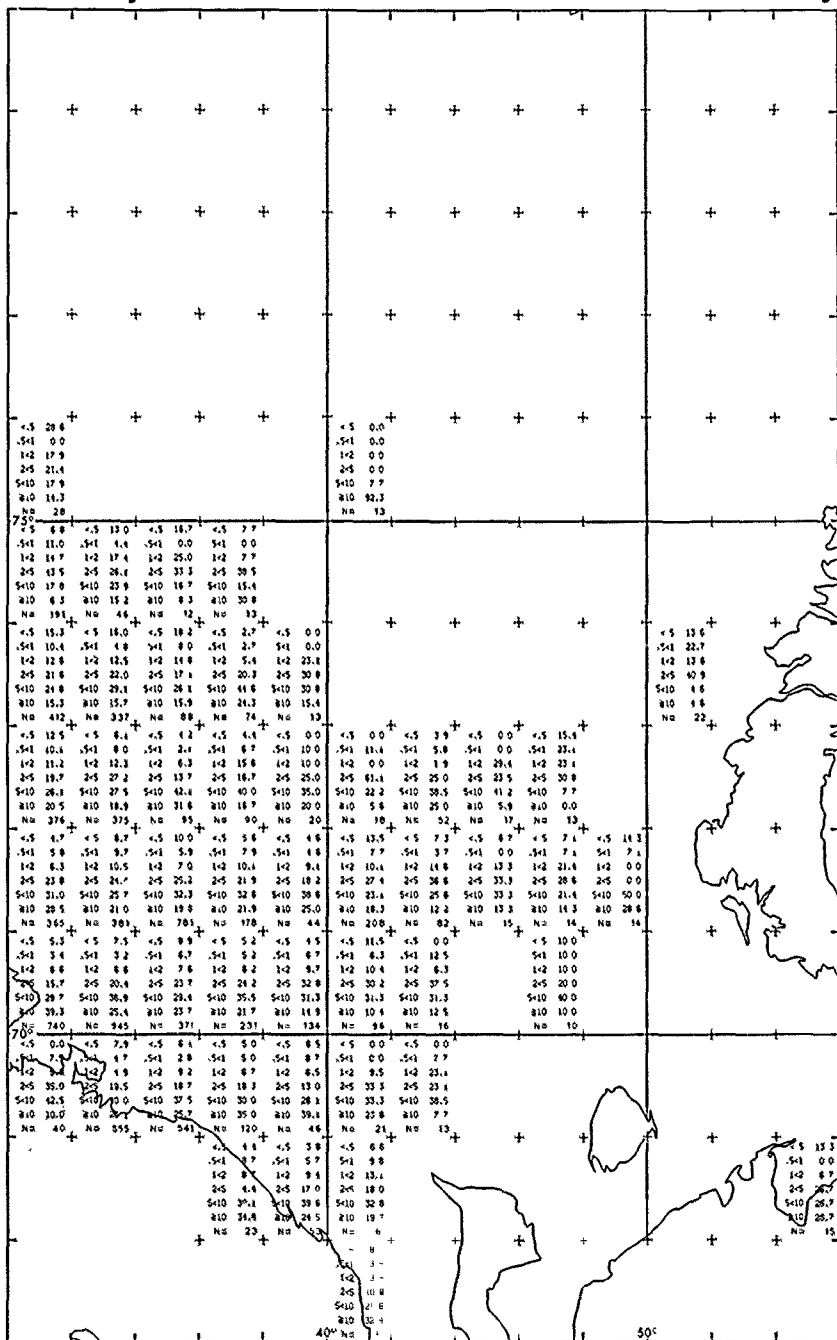
February

Visibility



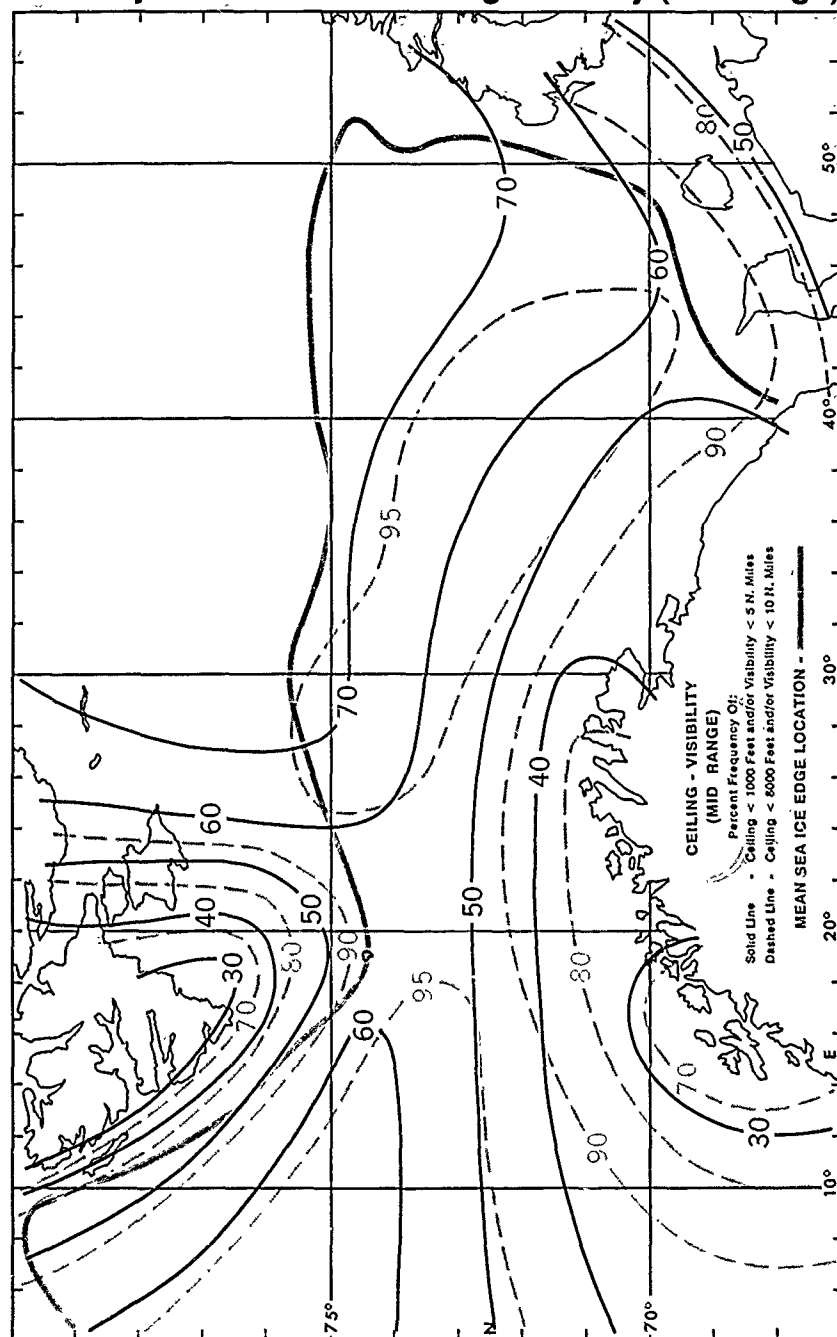
February

Visibility



February

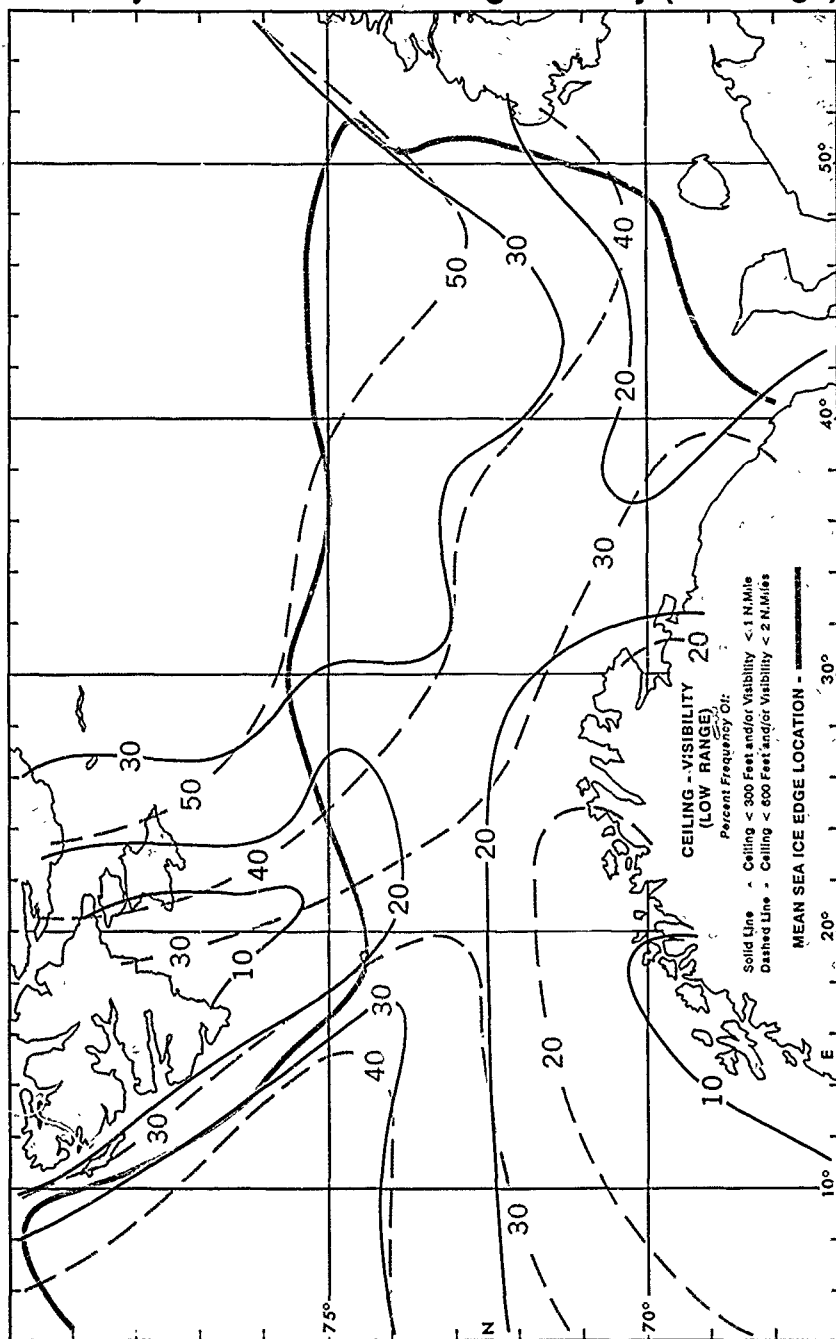
Ceiling-Visibility (mid range)



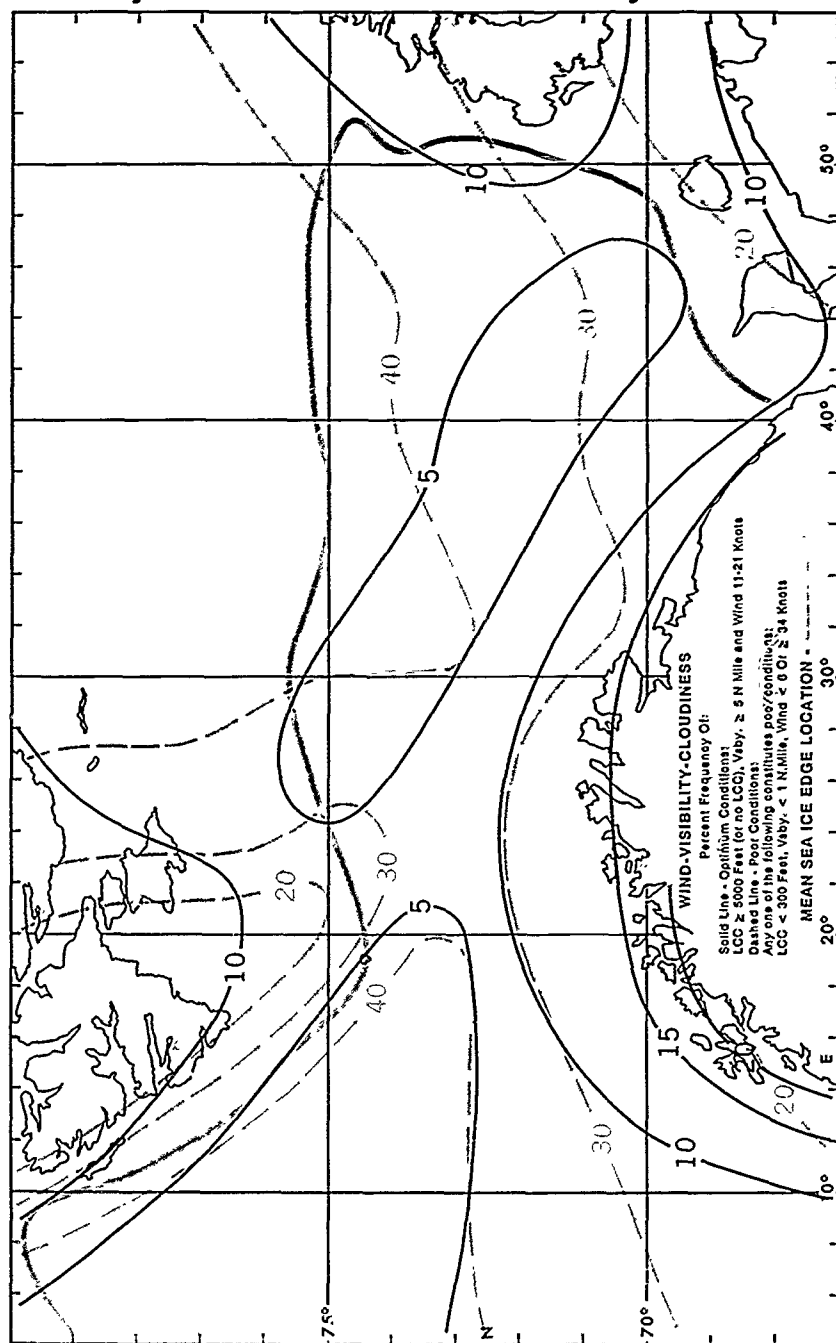
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

February

Ceiling-Visibility (low range)



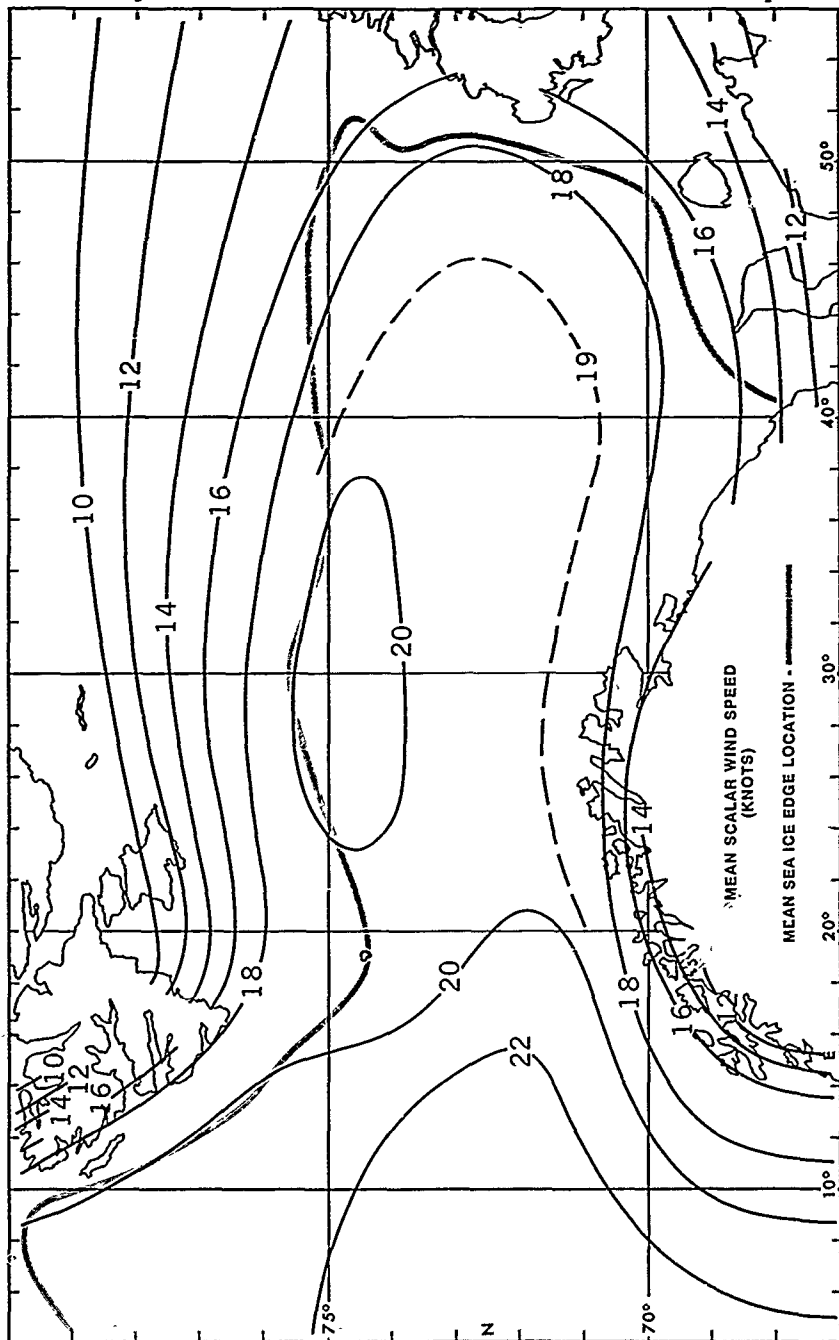
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

February

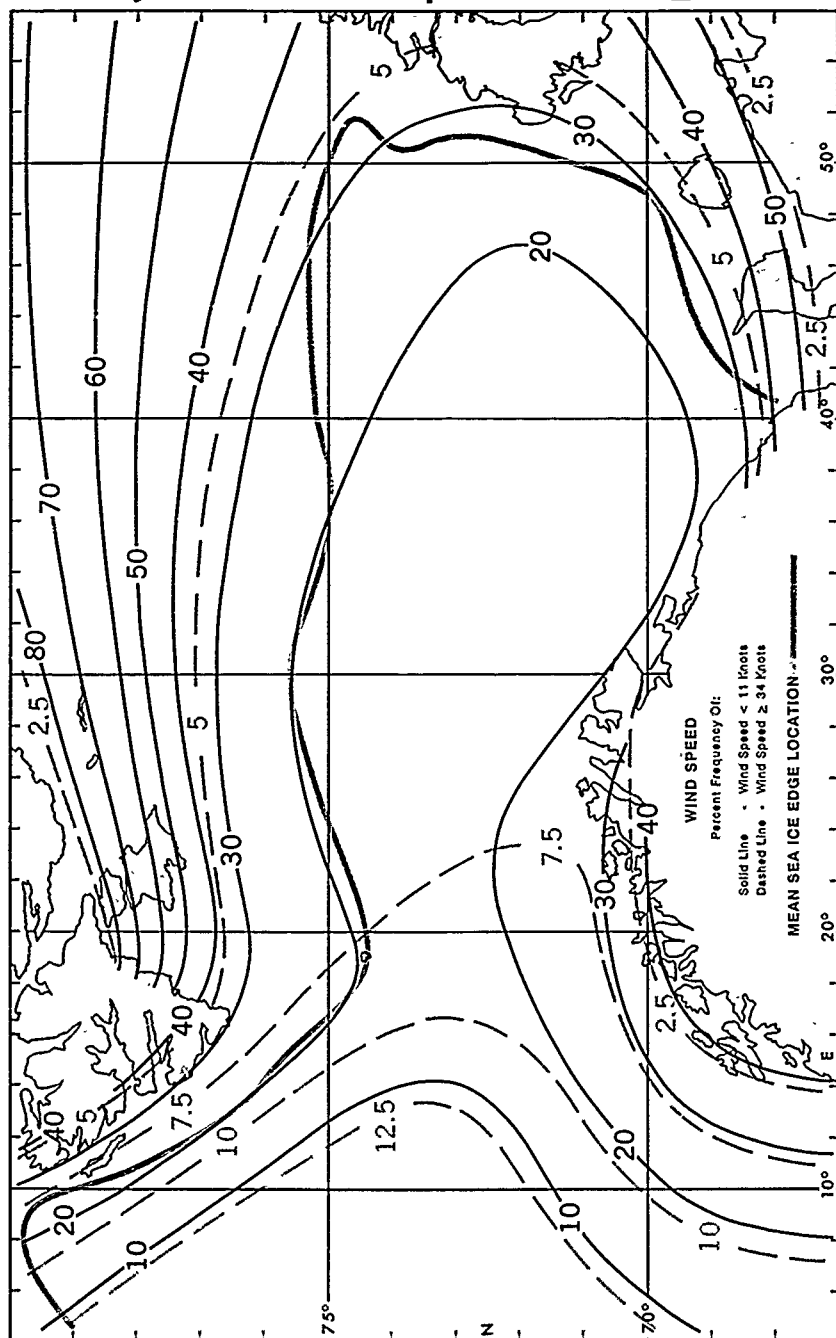
Mean Scalar Wind Speed



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

February

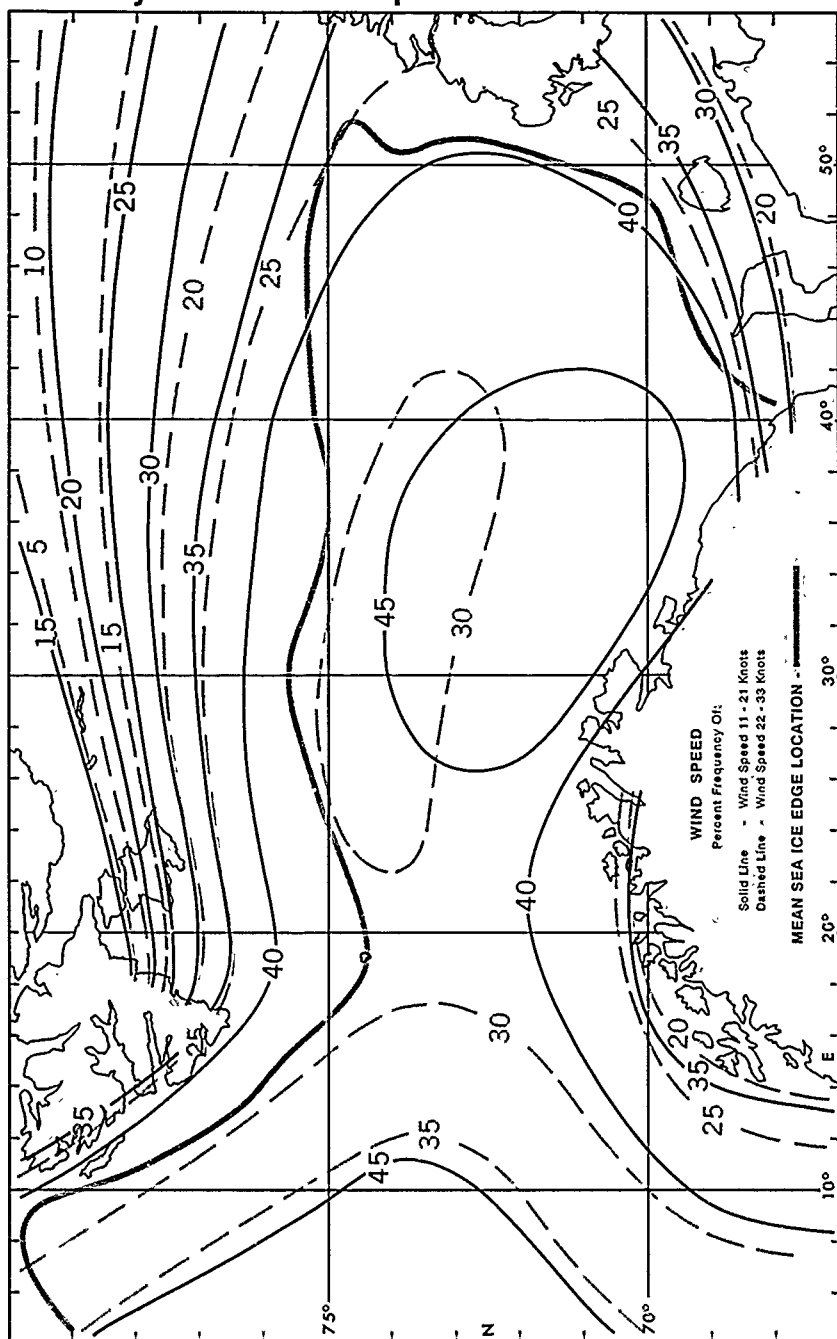
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

February

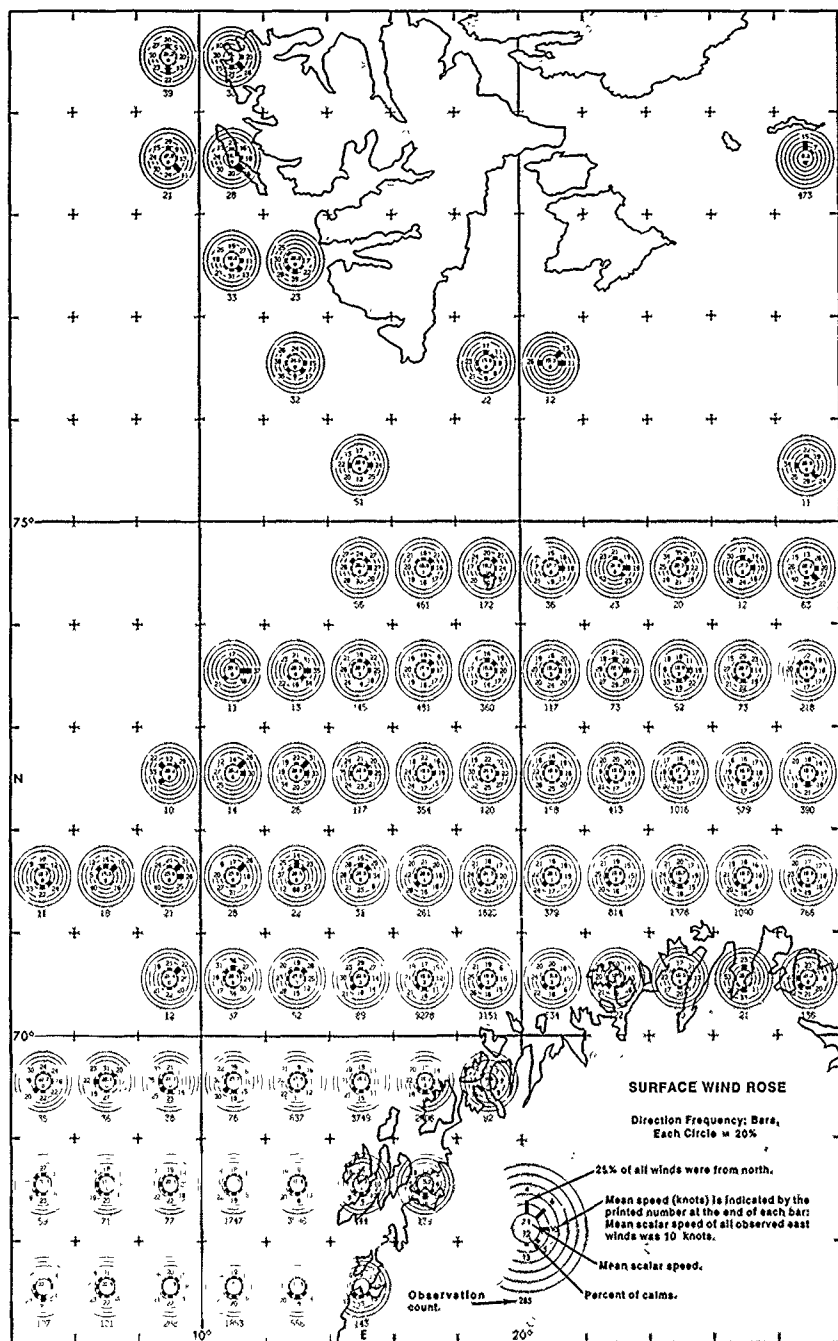
Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

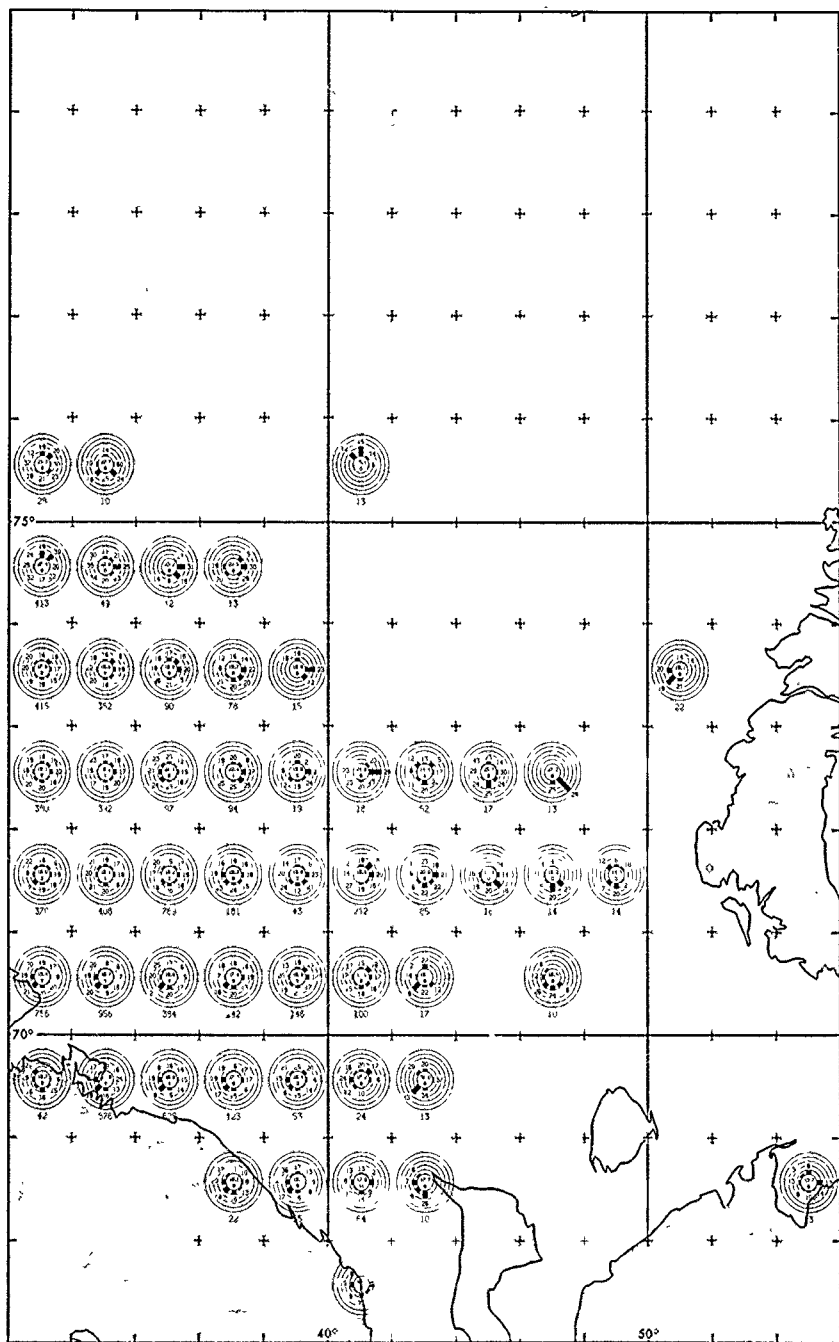
February

Surface Wind Roses



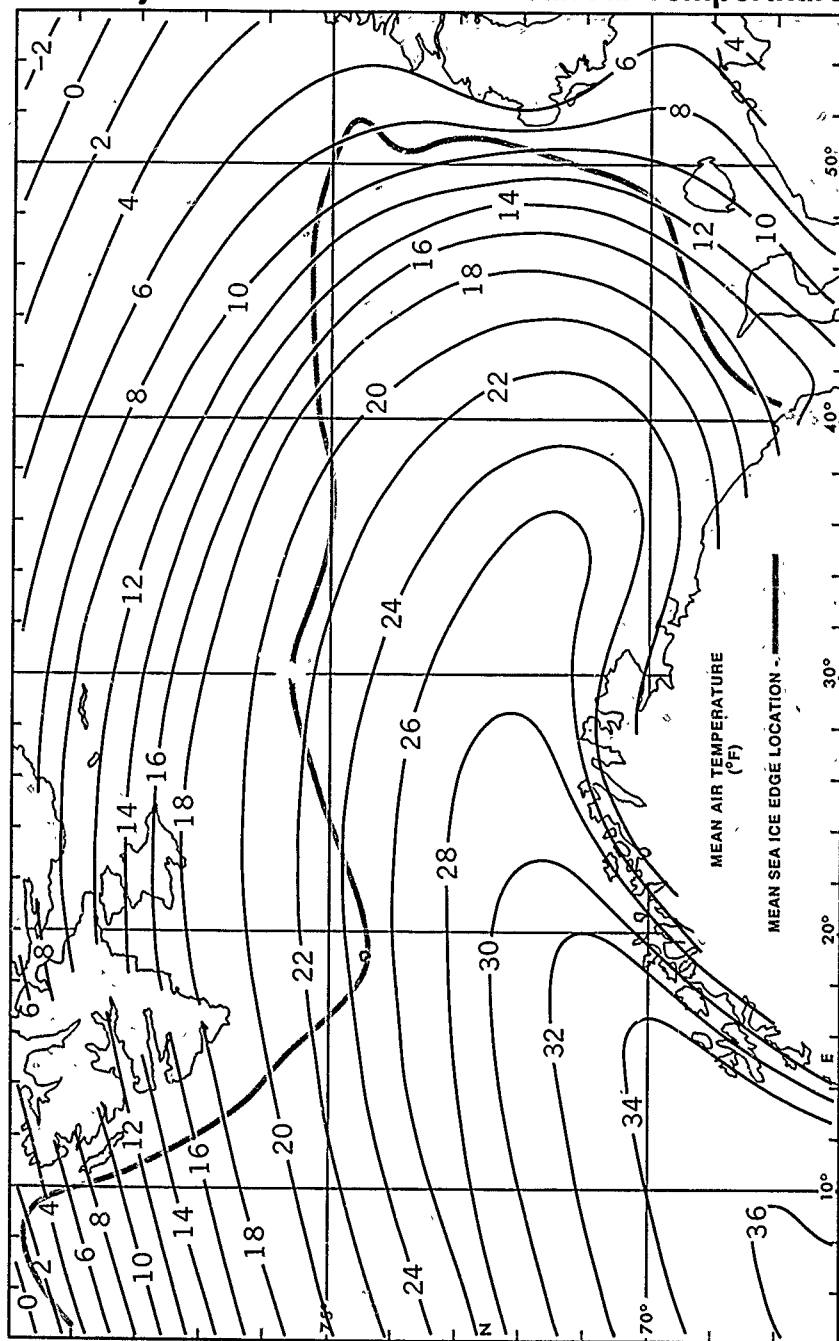
February

Surface Wind Roses



February

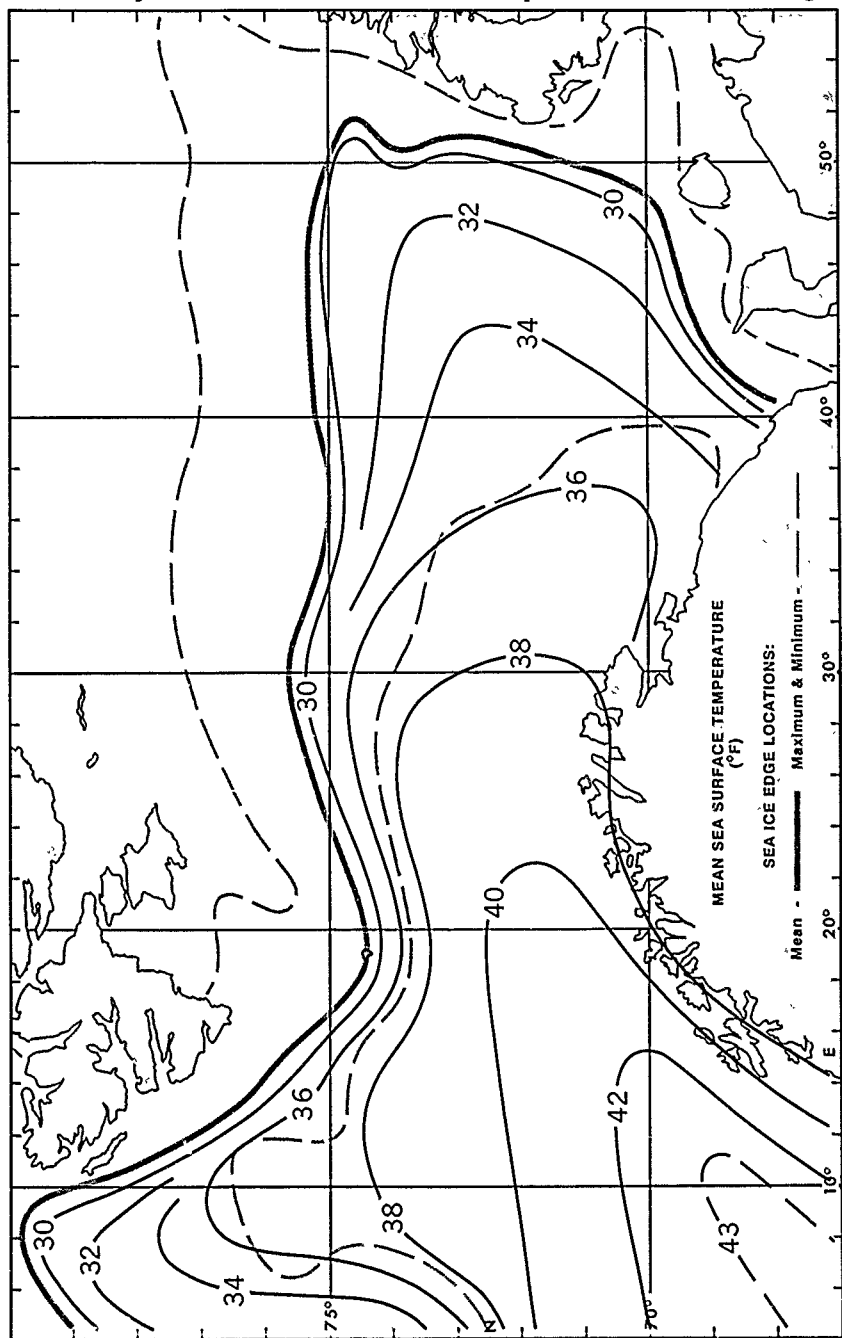
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

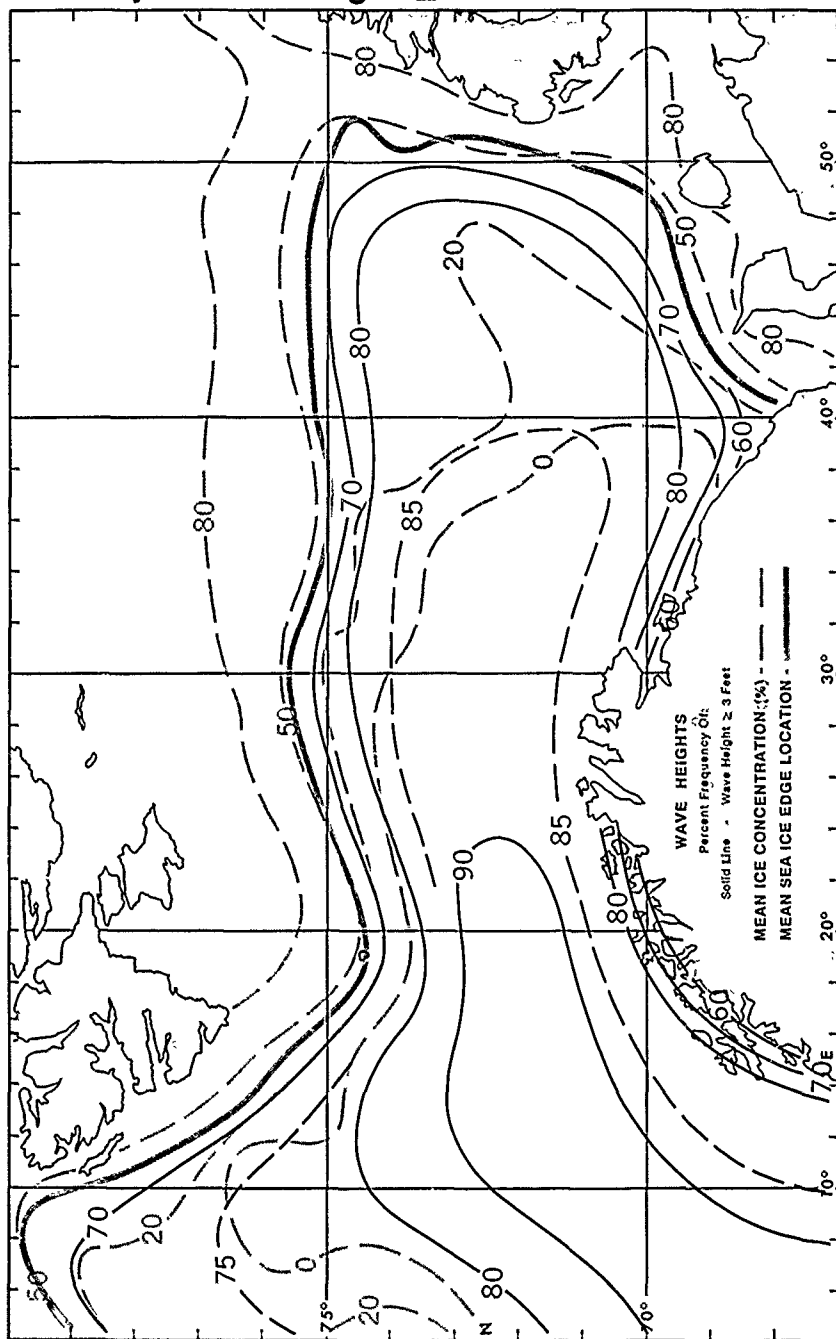
February

Mean Sea Temperature & Ice Edge



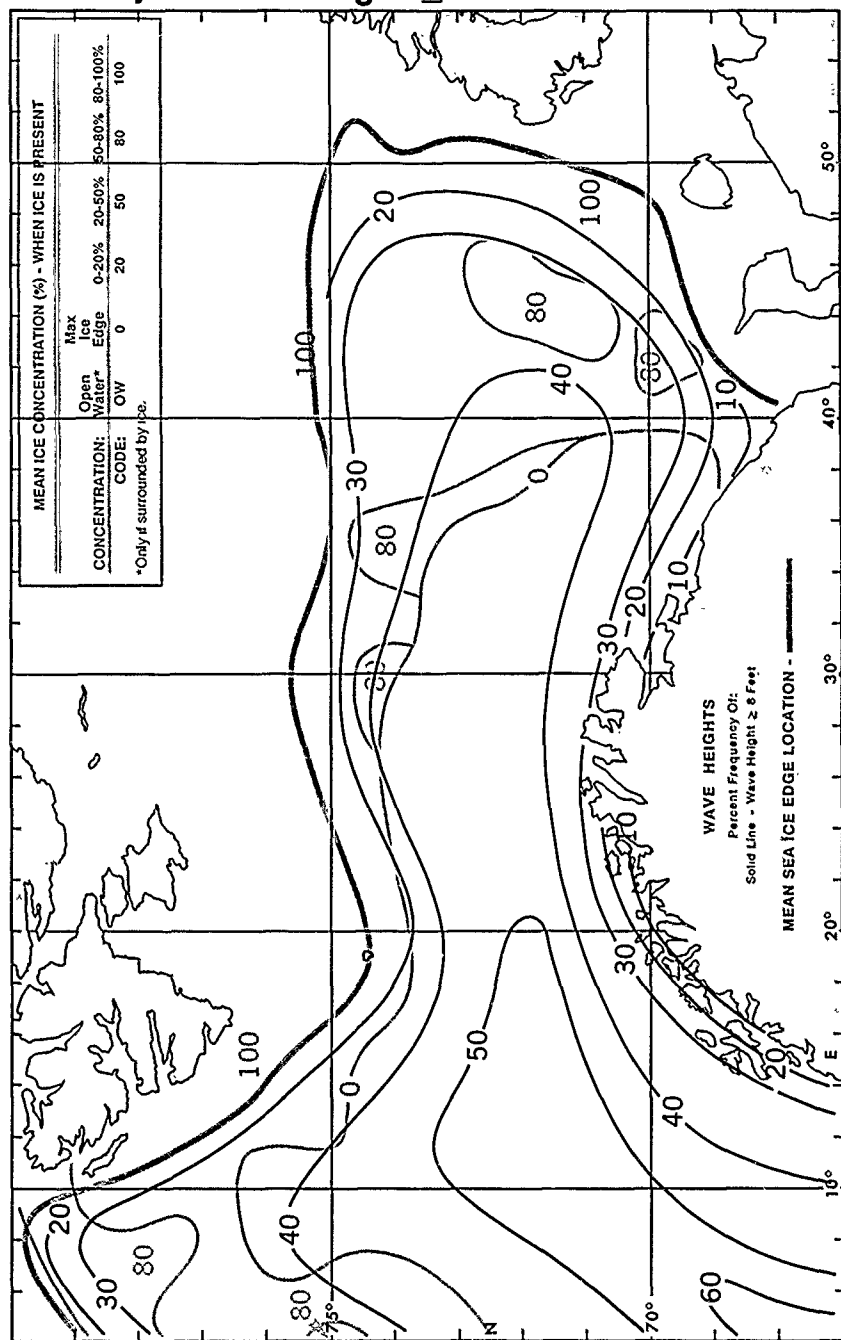
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

February Wave Height ≥ 3 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

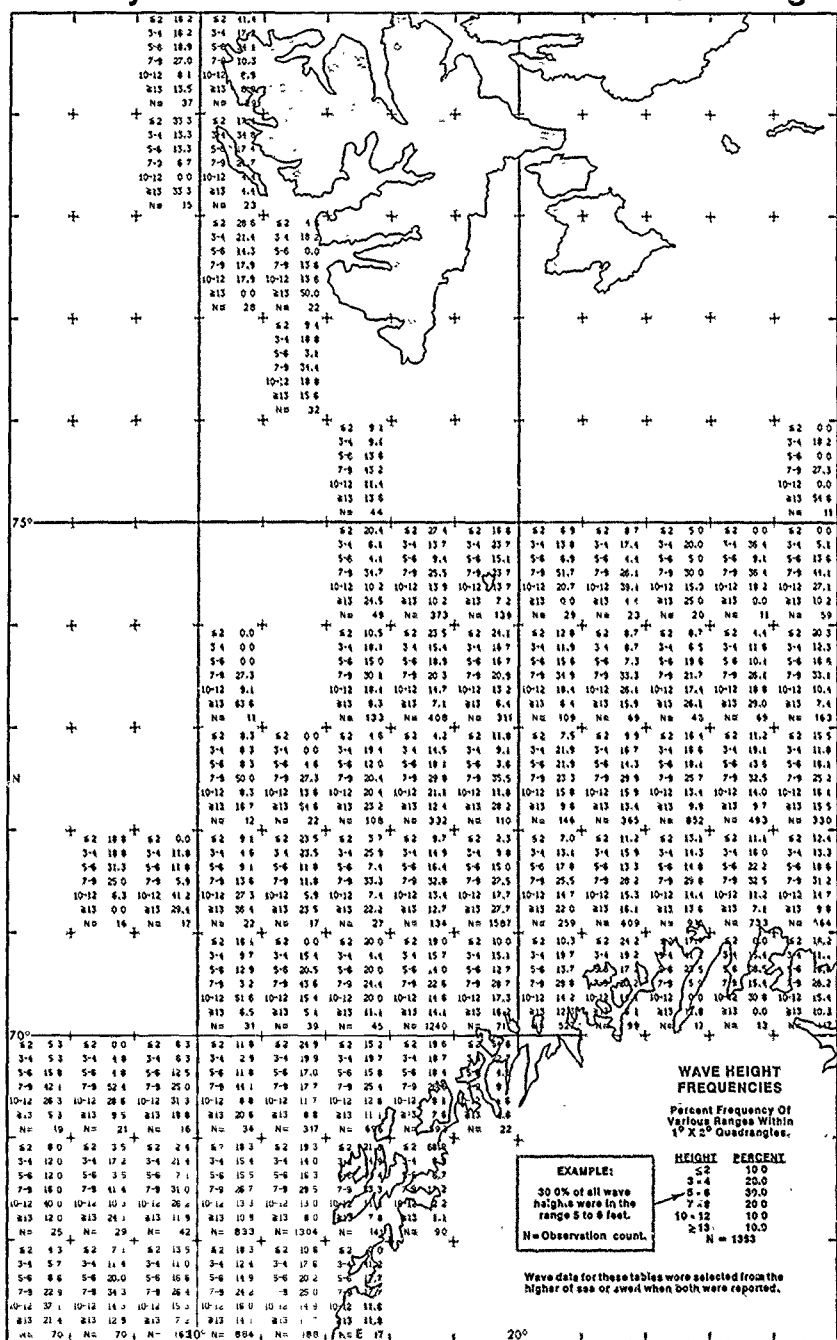
February Wave Height ≥ 8 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

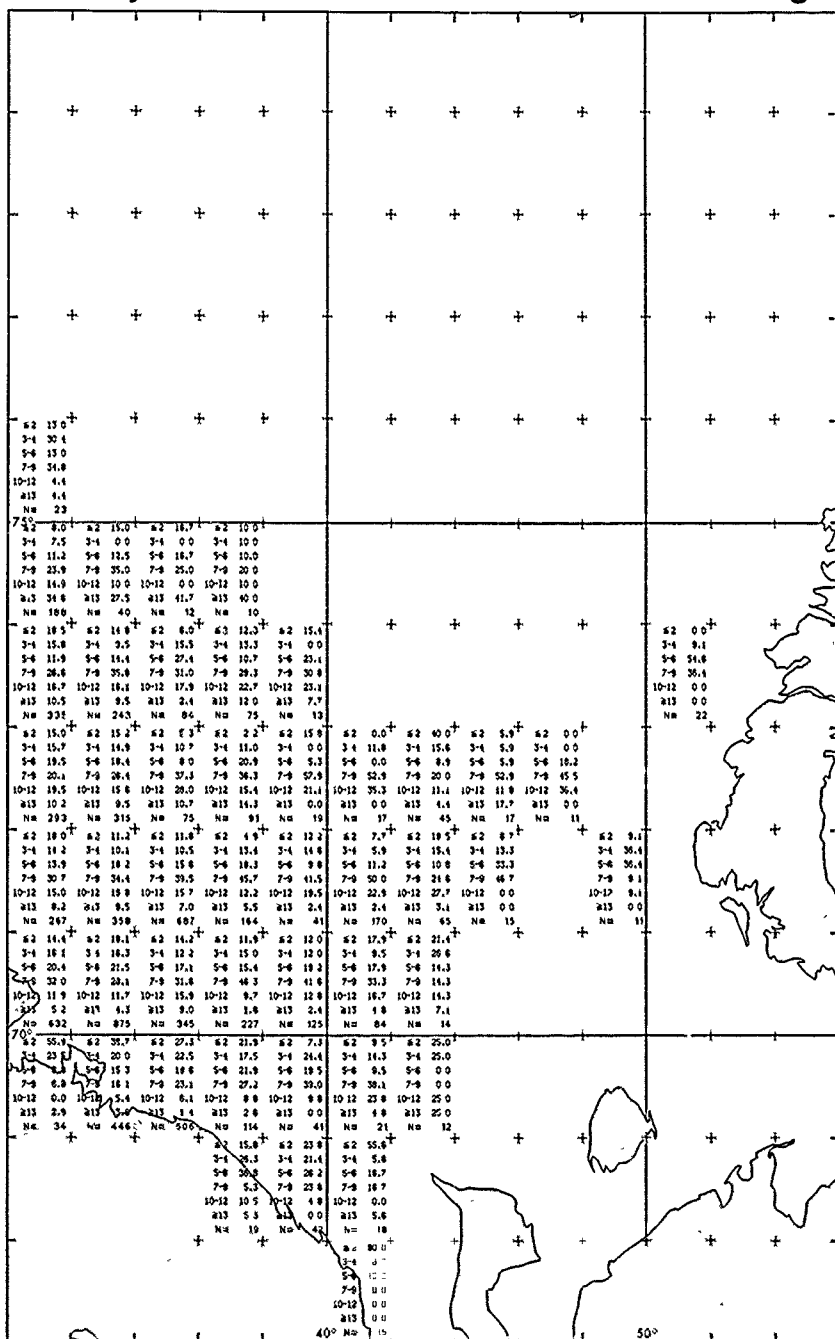
February

Wave Height



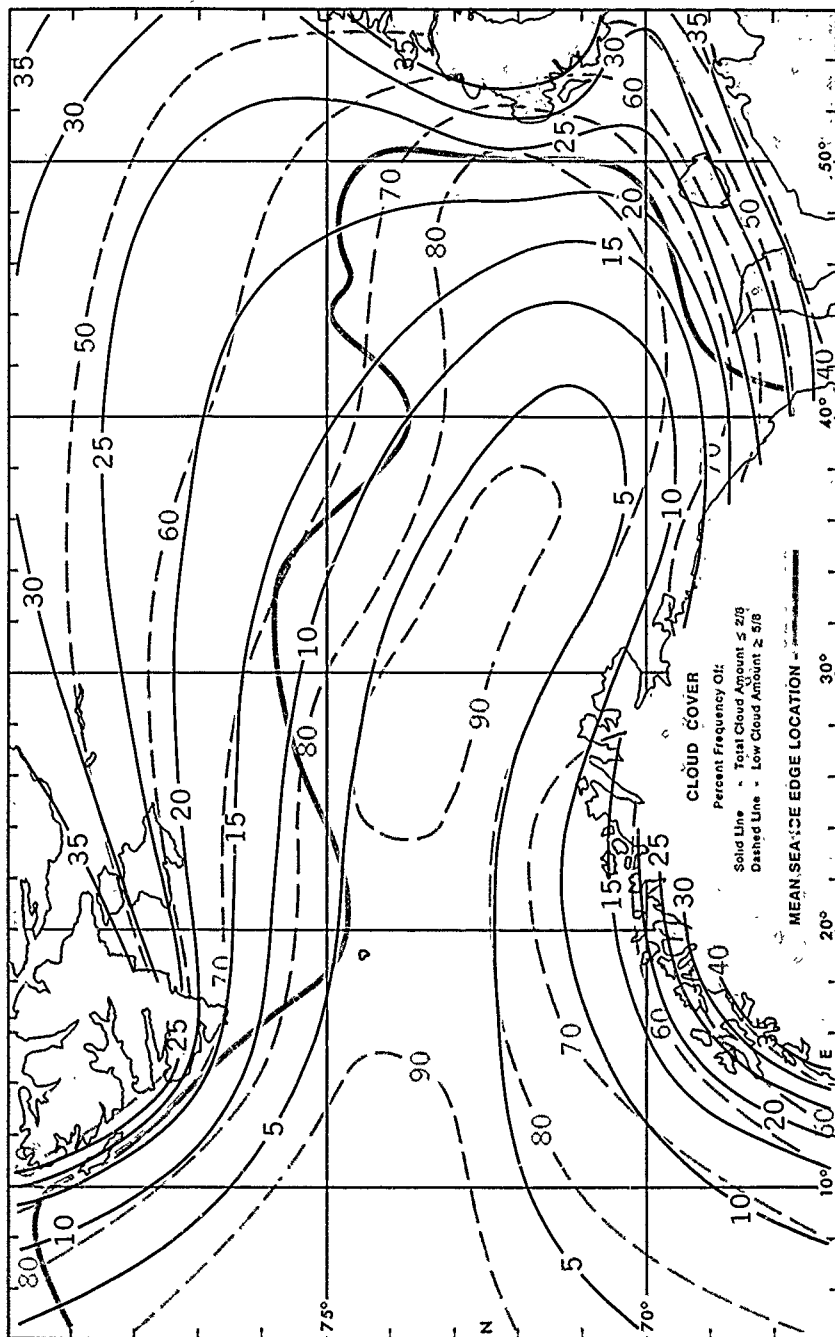
February

Wave Height



March

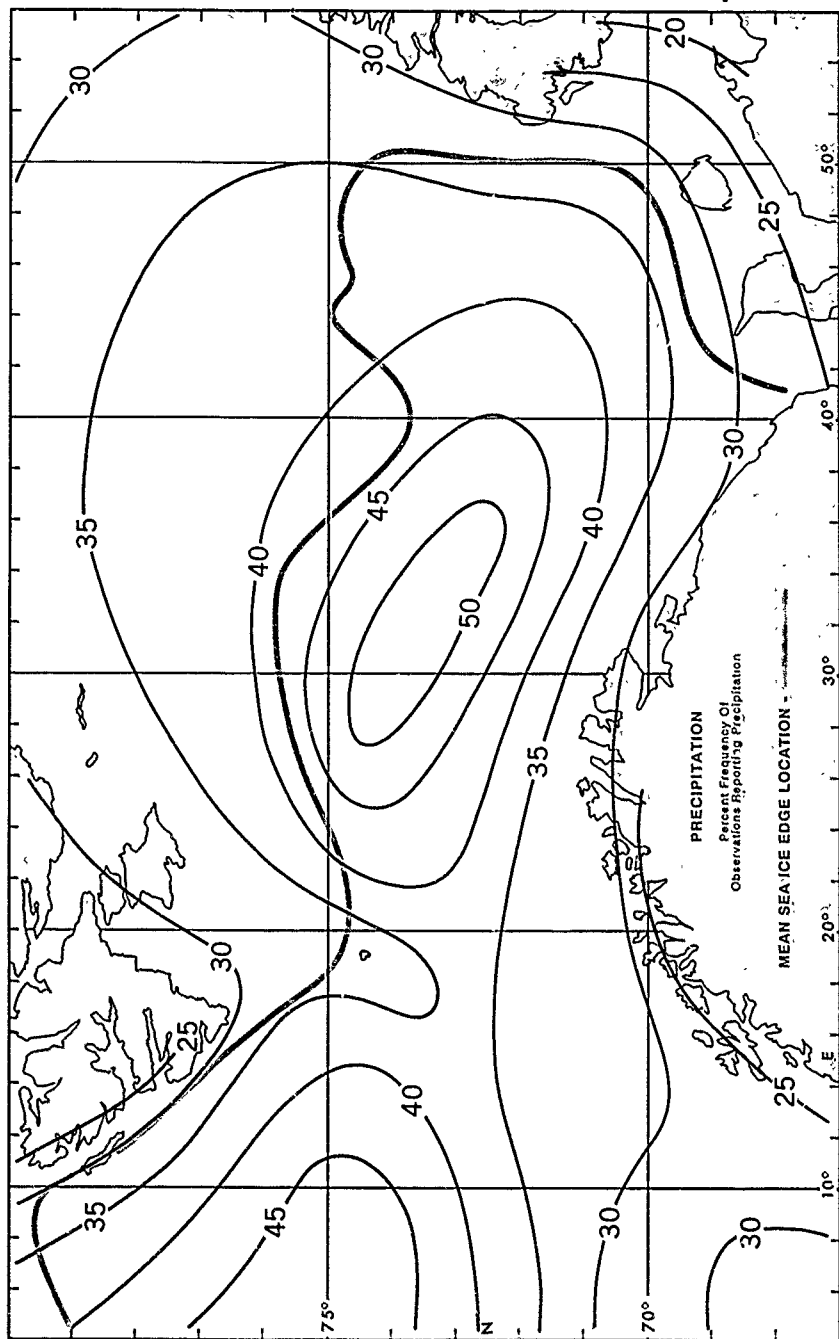
Clouds



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

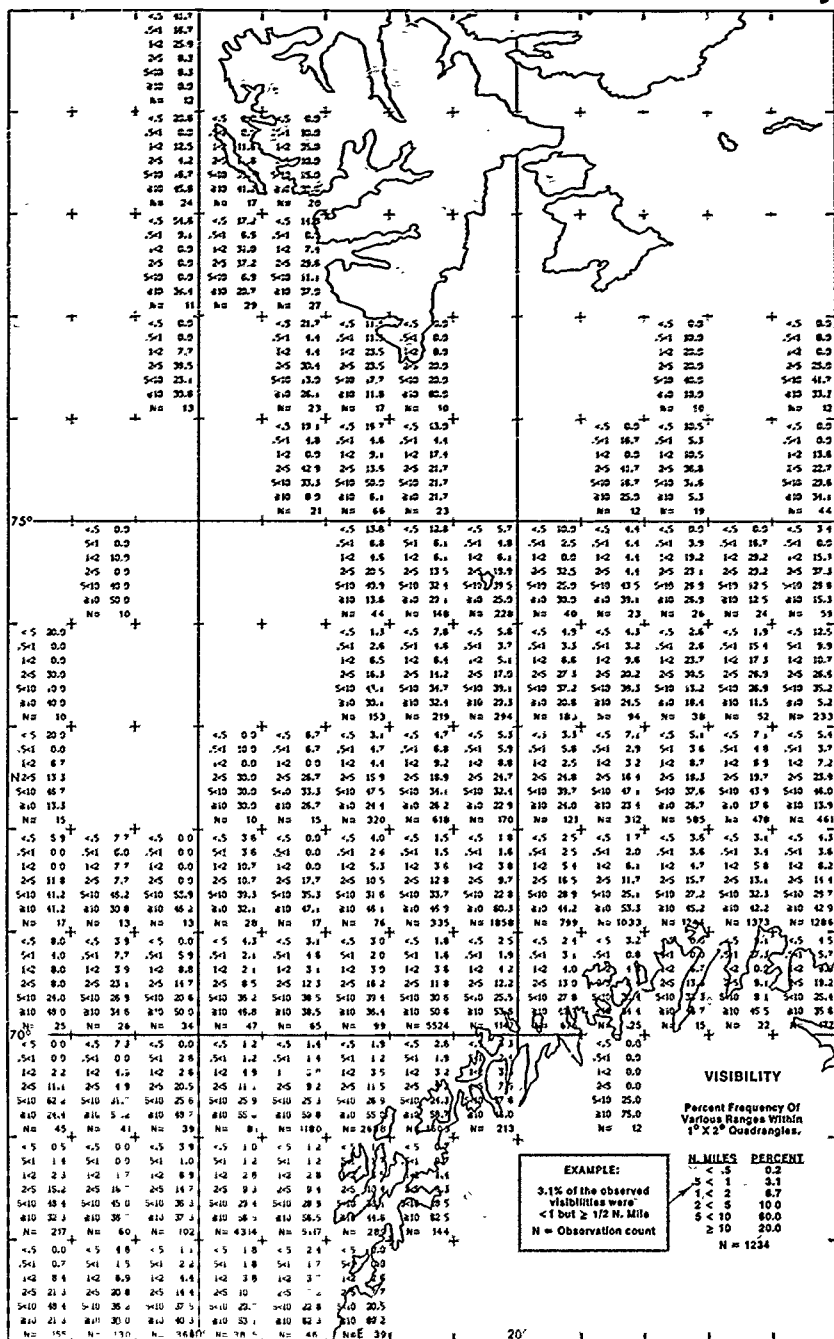
Precipitation



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

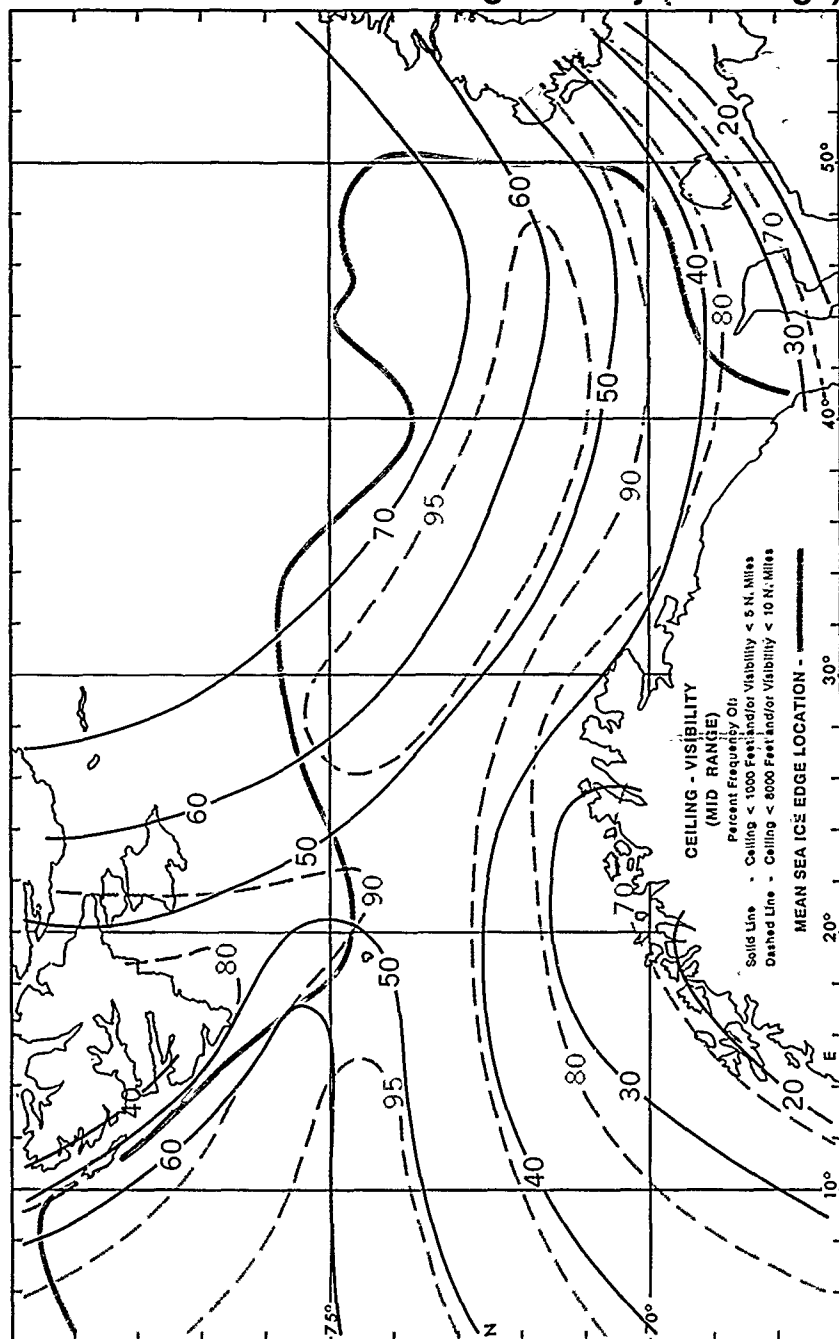
March

Visibility



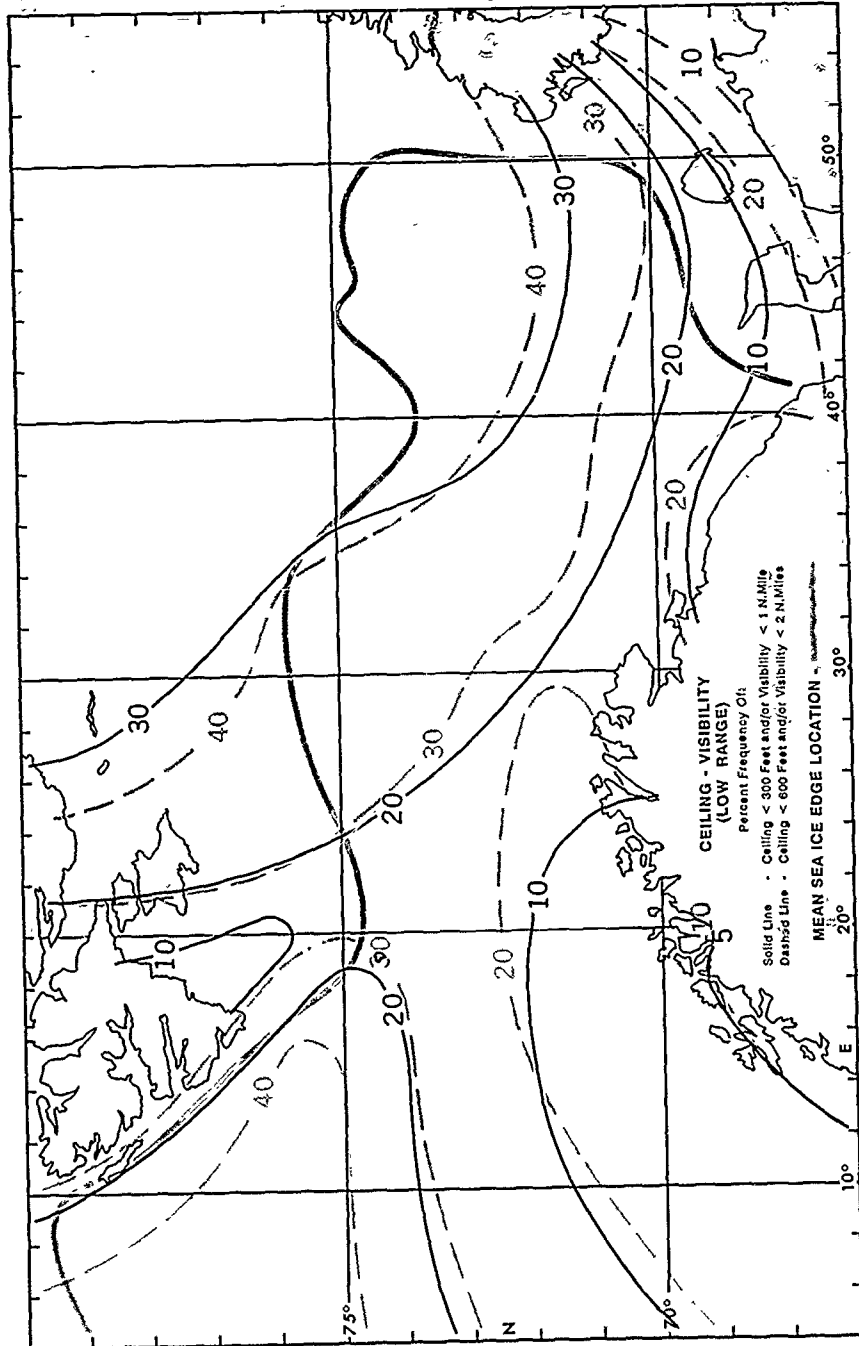
March

Ceiling-Visibility (mid range)



March

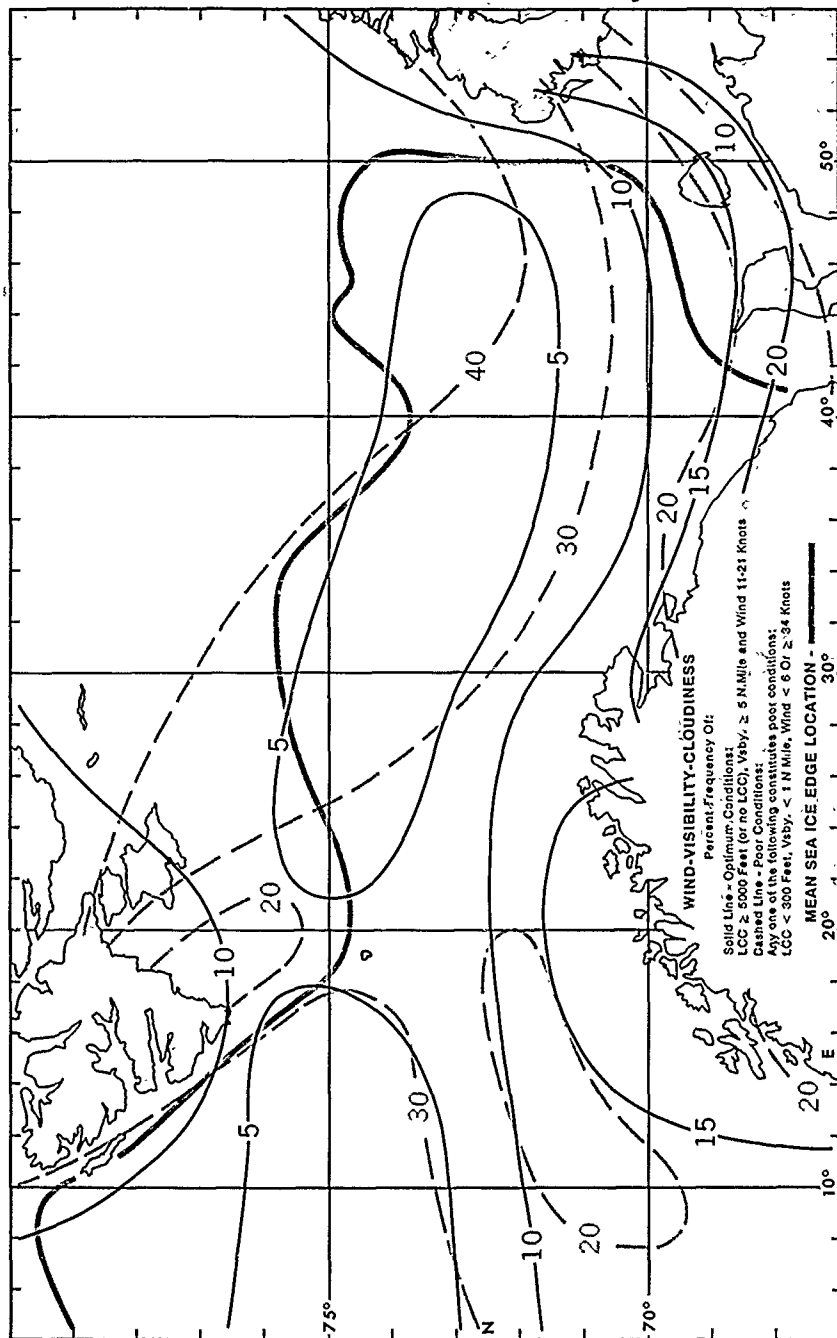
Ceiling-Visibility (low range)



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts

March

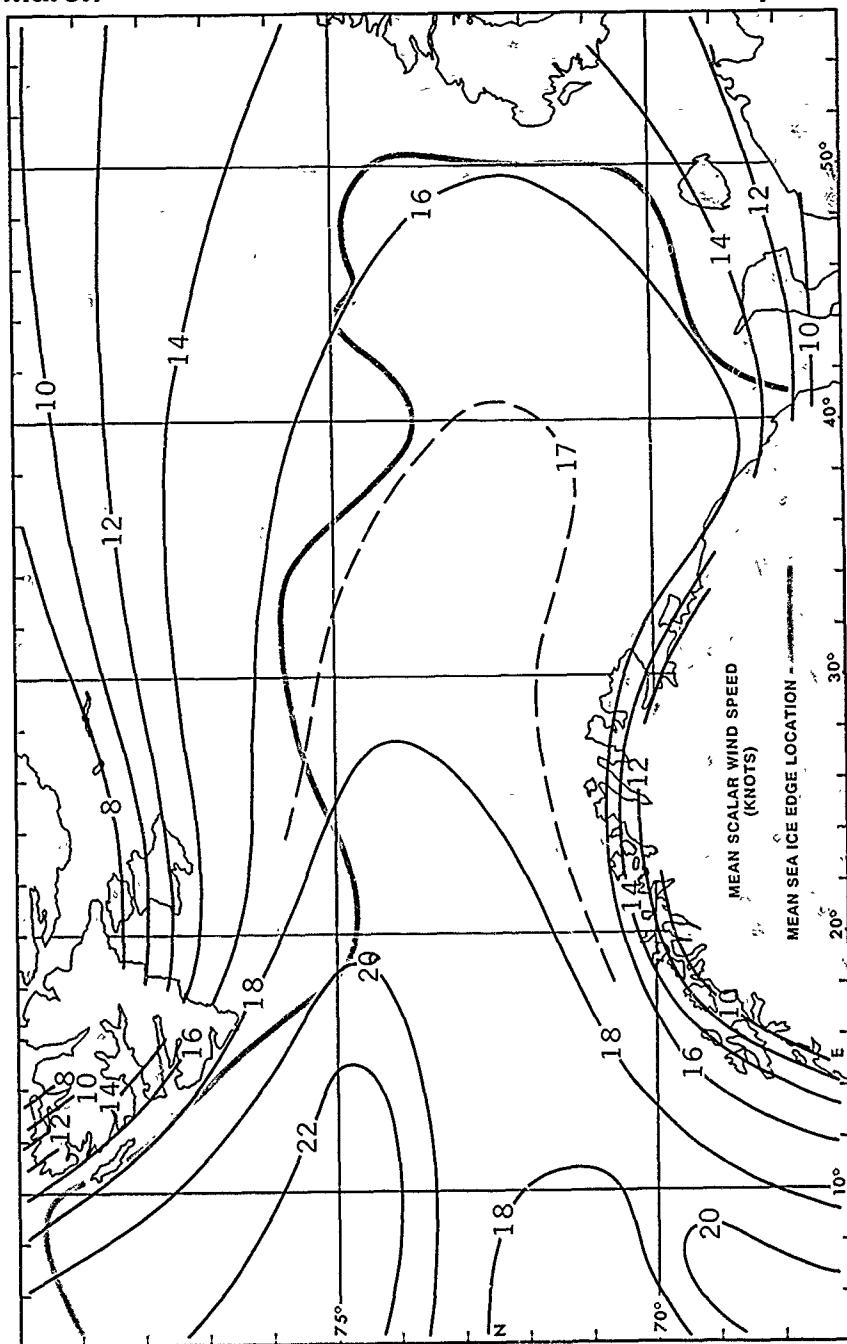
Wind-Visibility-Cloudiness



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

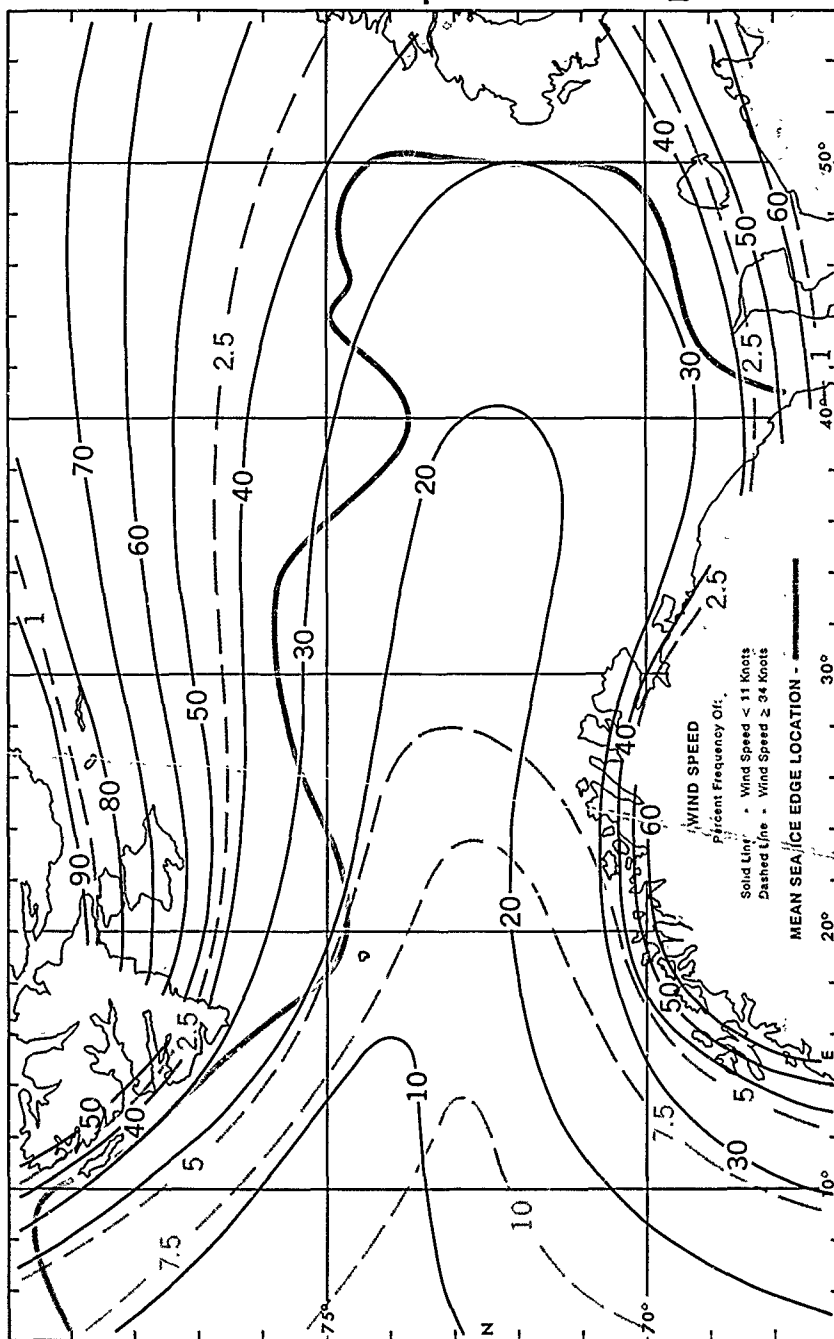
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

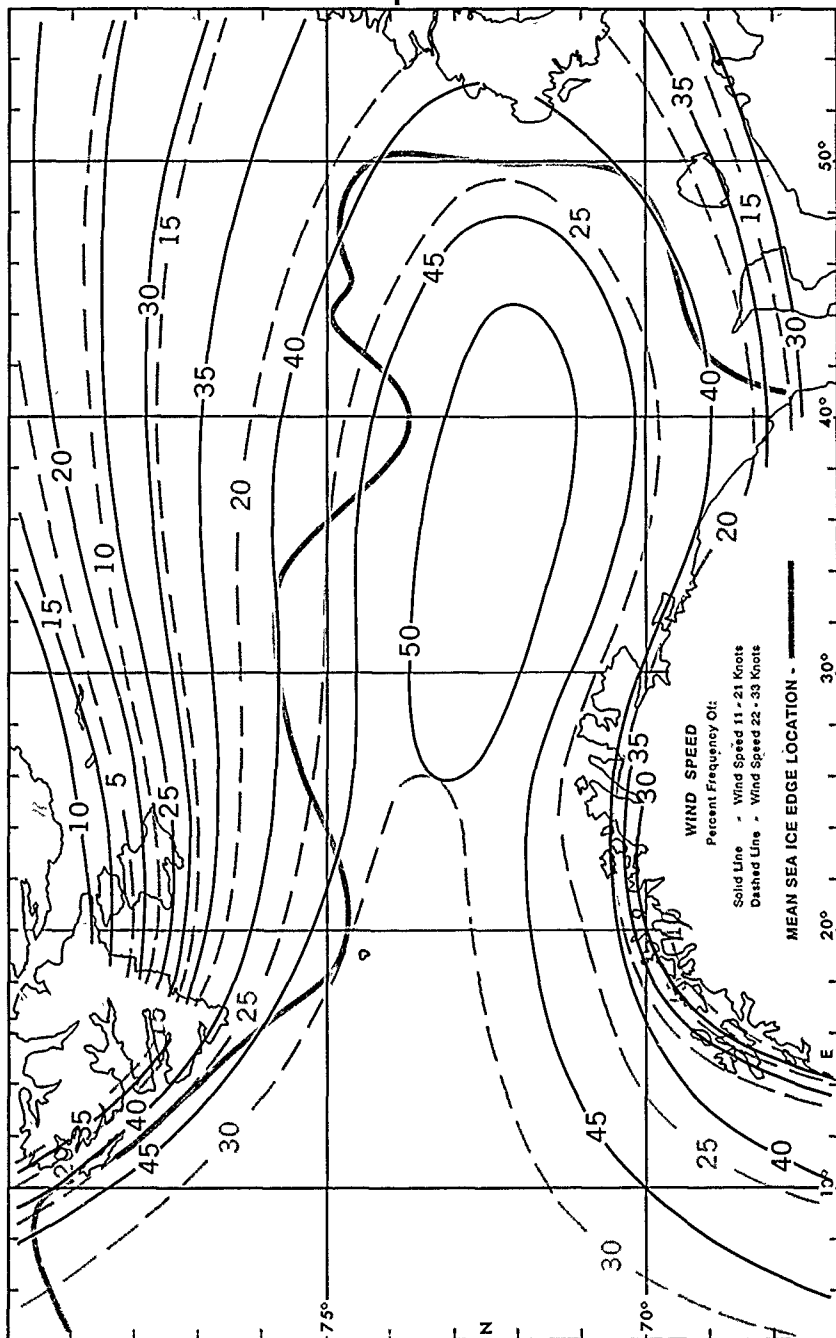
Wind Speed < 11 and ≥ 34 Knots



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

Surface Wind Roses



Direction Frequency: Bars,
Each Circle = 20%

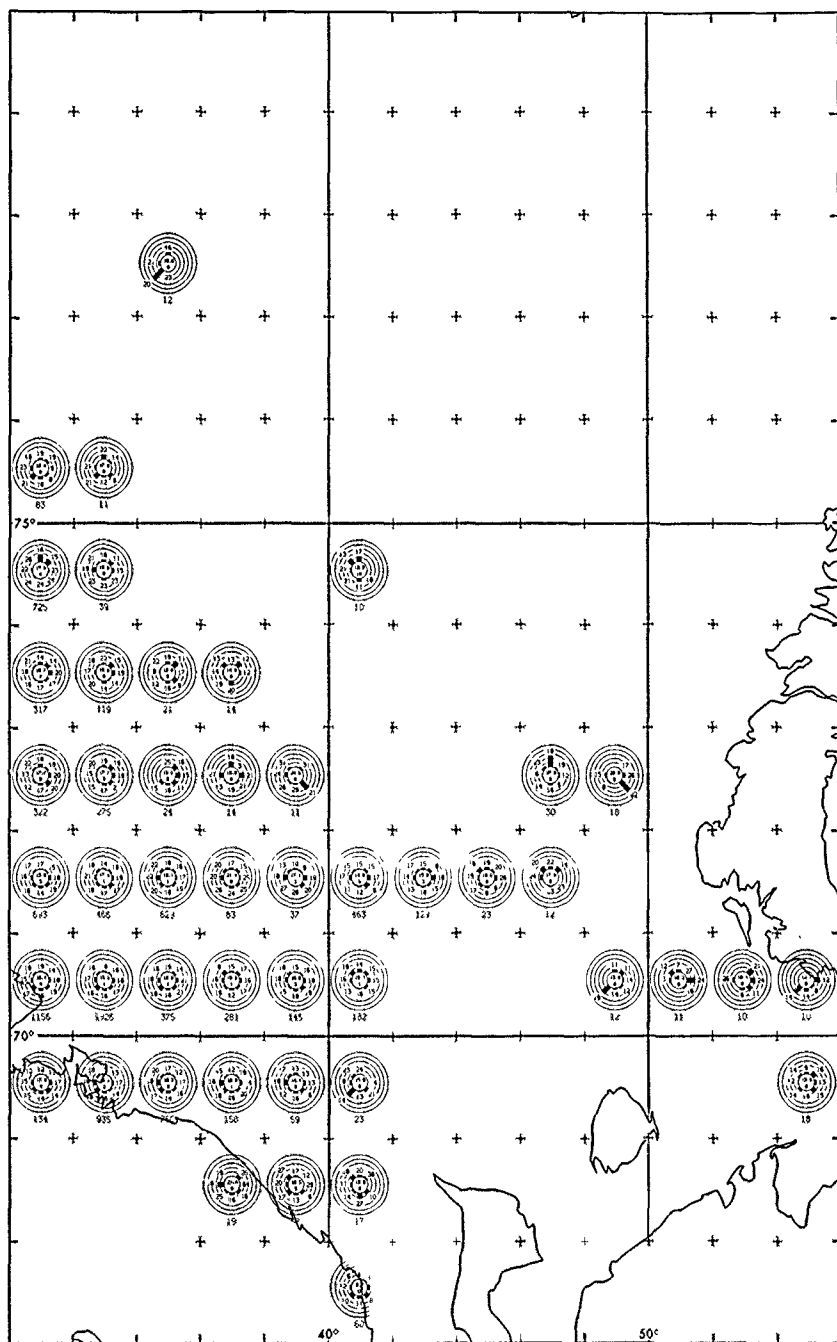
Mean speed (knots) is indicated by the printed number at the end of each bar. Mean scalar speed of all observed east winds was 10 knots.

Mean scalar ϵ
Percent of calms.

Observation
count.

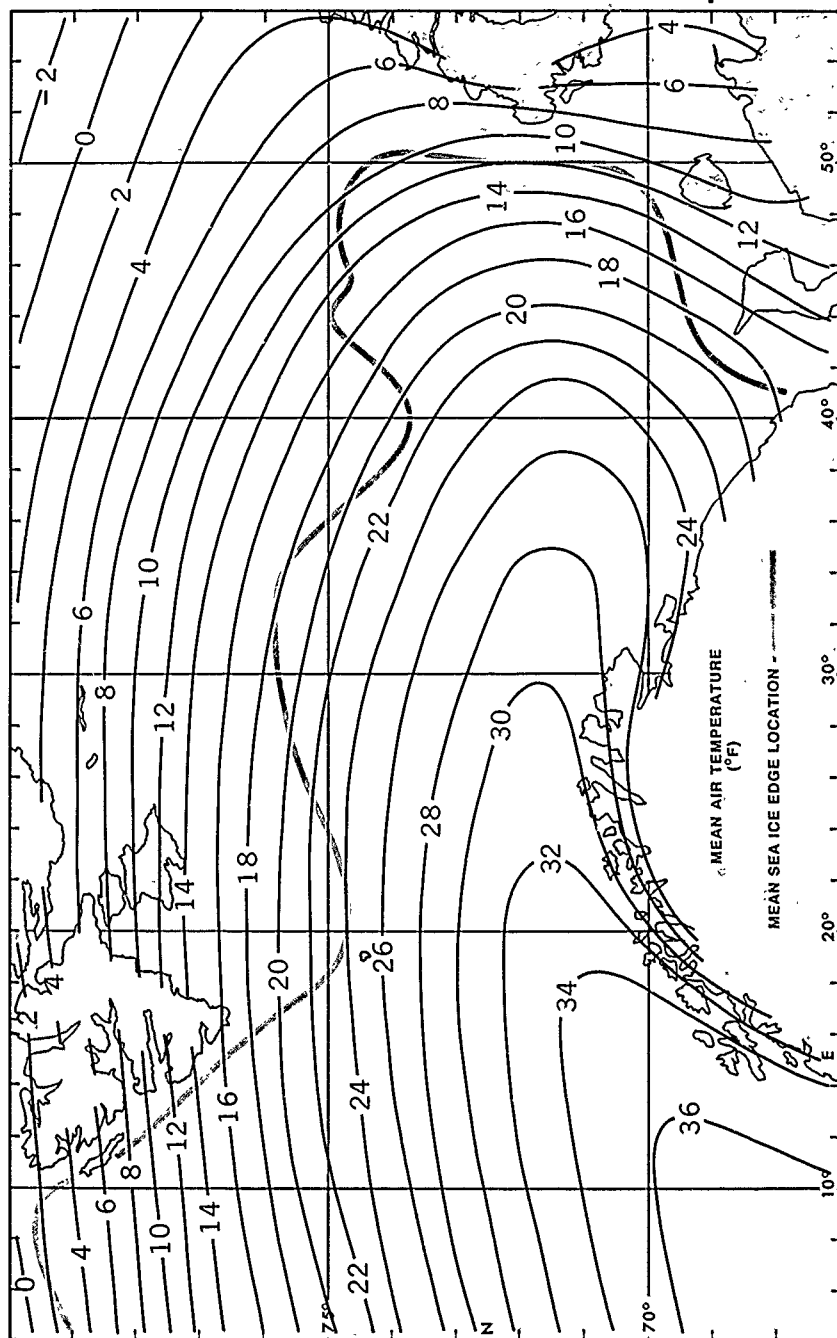
March

Surface Wind Roses



March

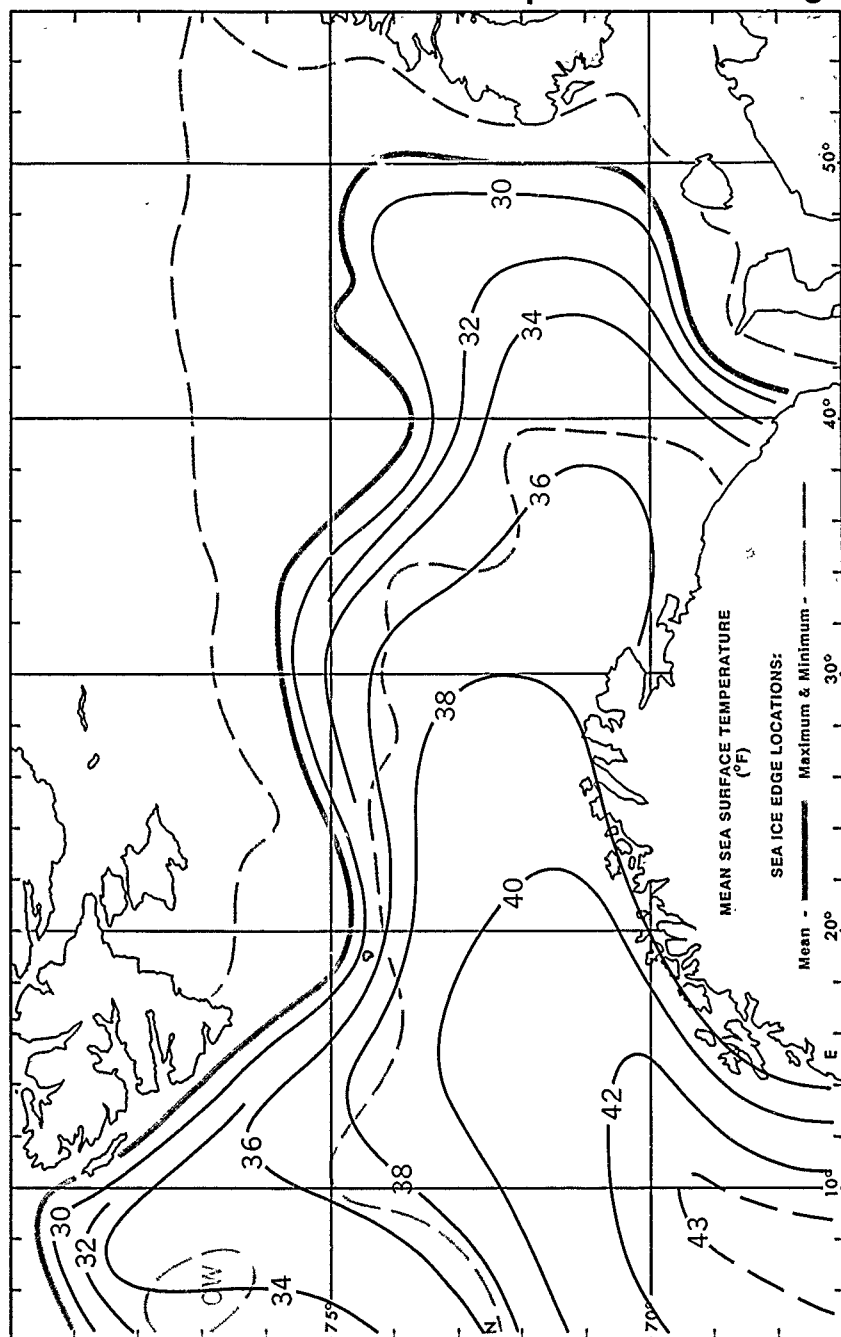
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

March

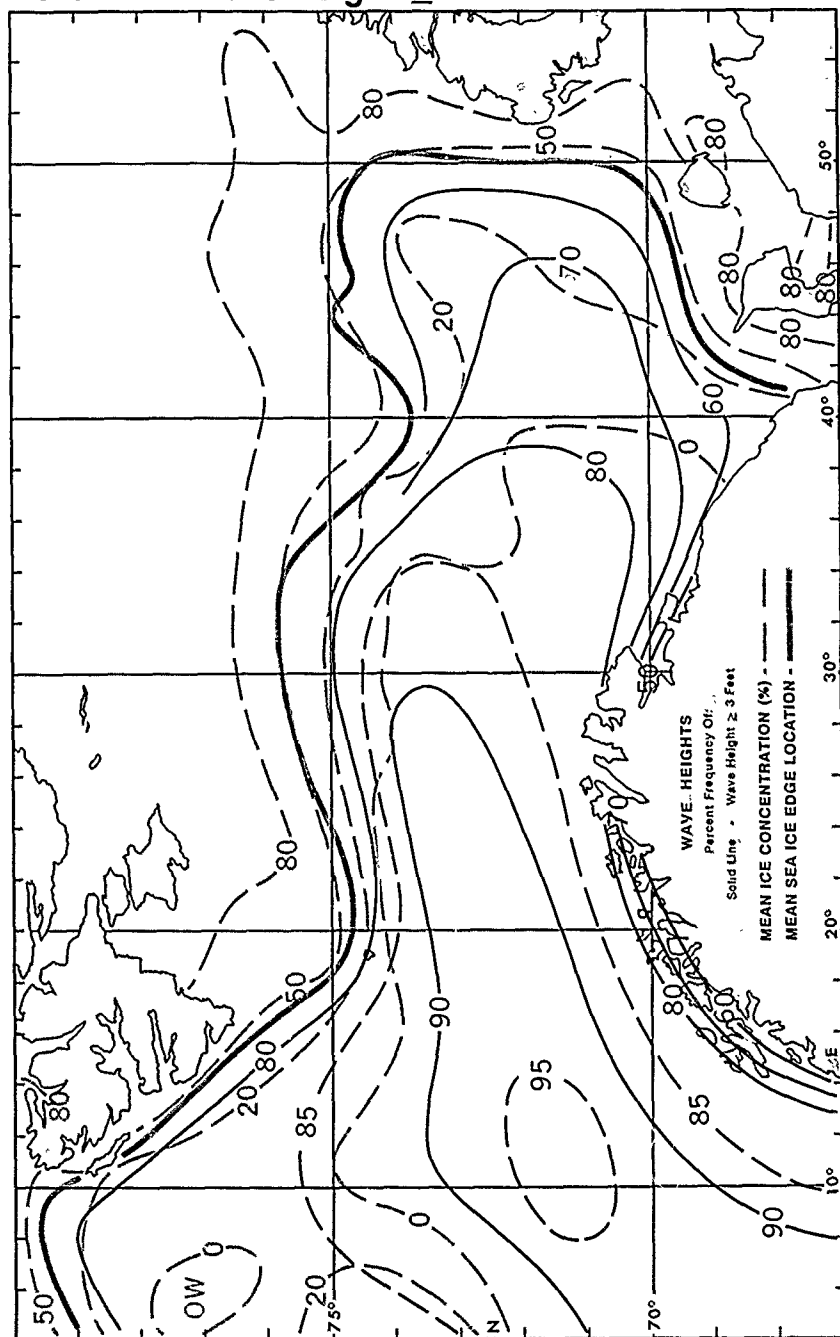
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

March

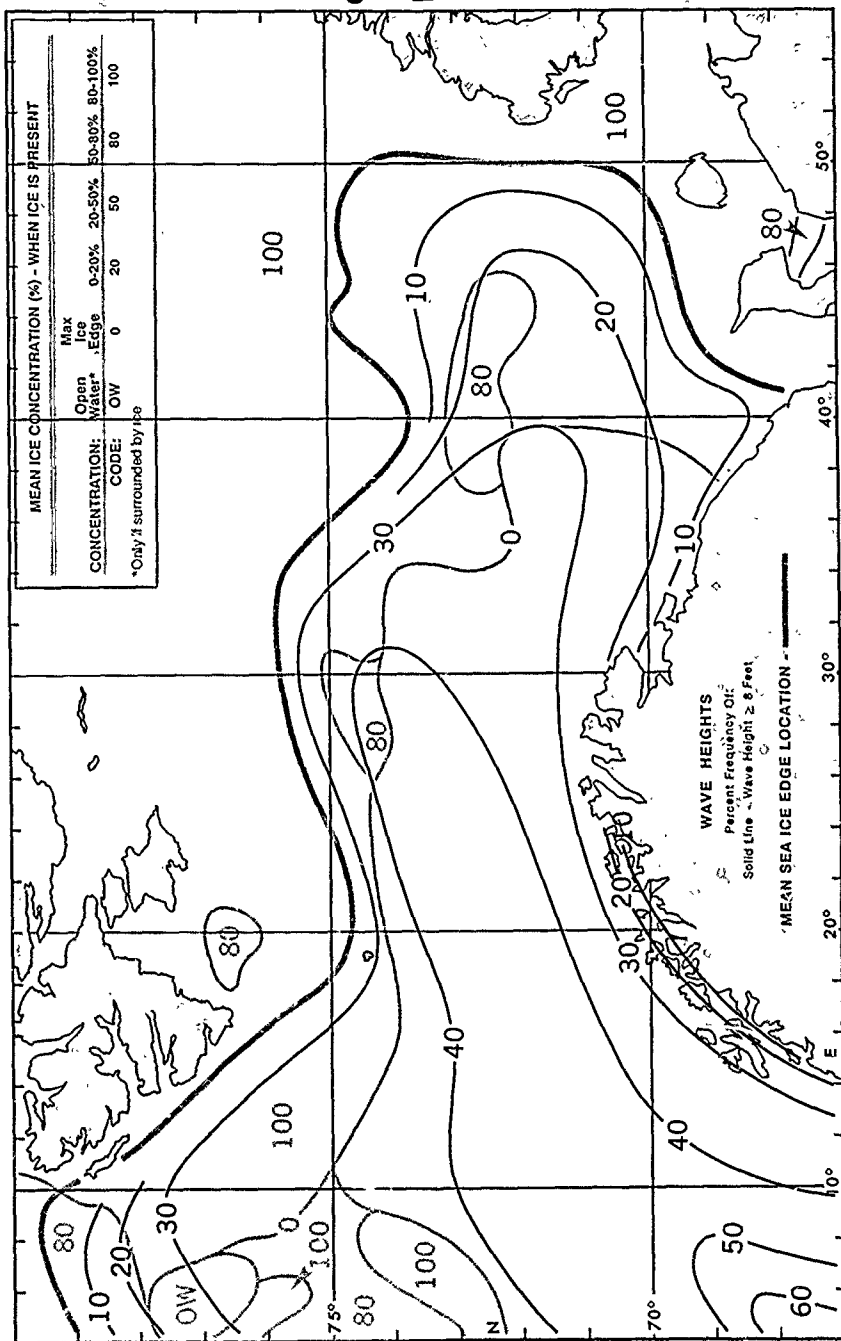
Wave Height ≥ 3 Ft. & Ice Concentration



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

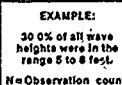
March

Wave Height ≥ 8 Ft. & Ice Concentration



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

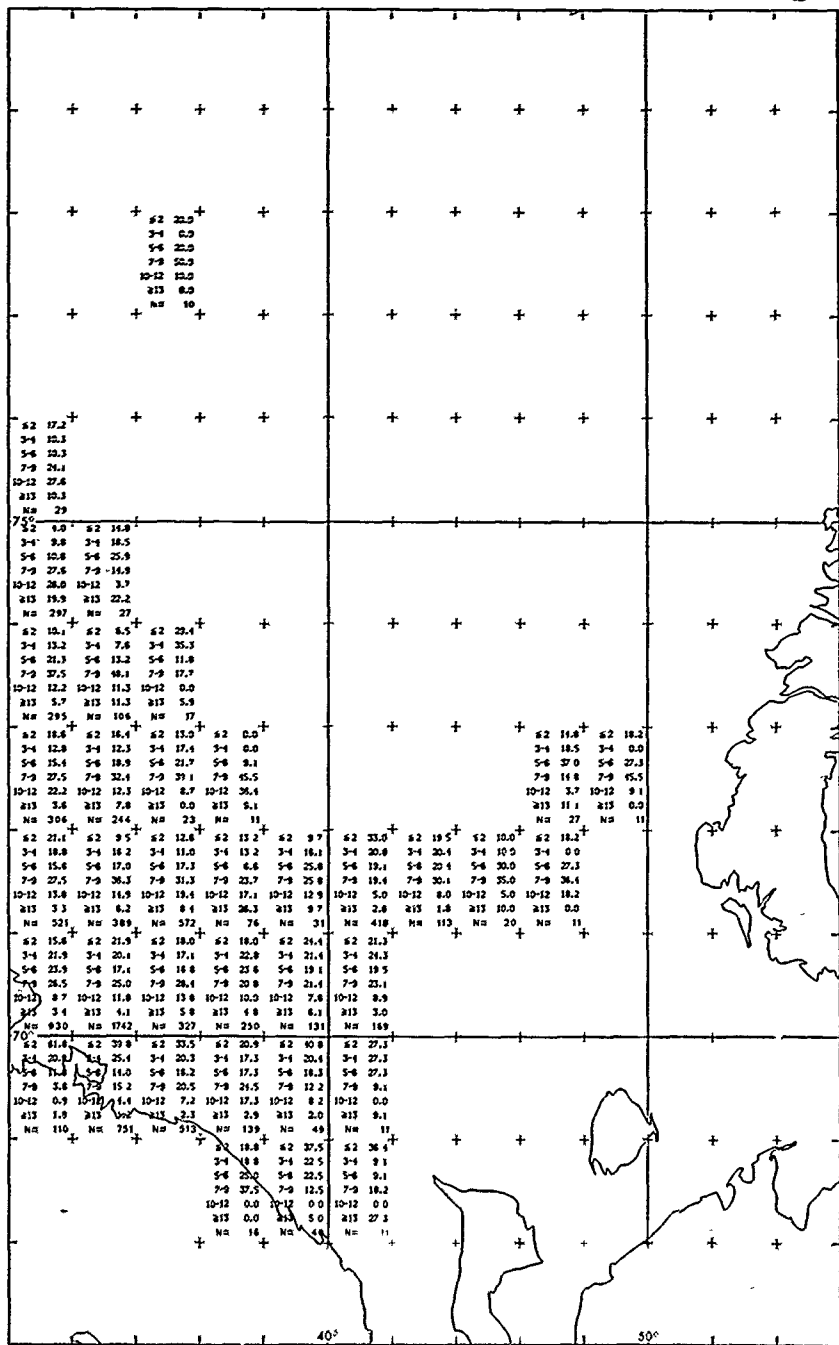
Wave Height



Wave data for these tables were selected from the higher of sea or swell when both were reported.

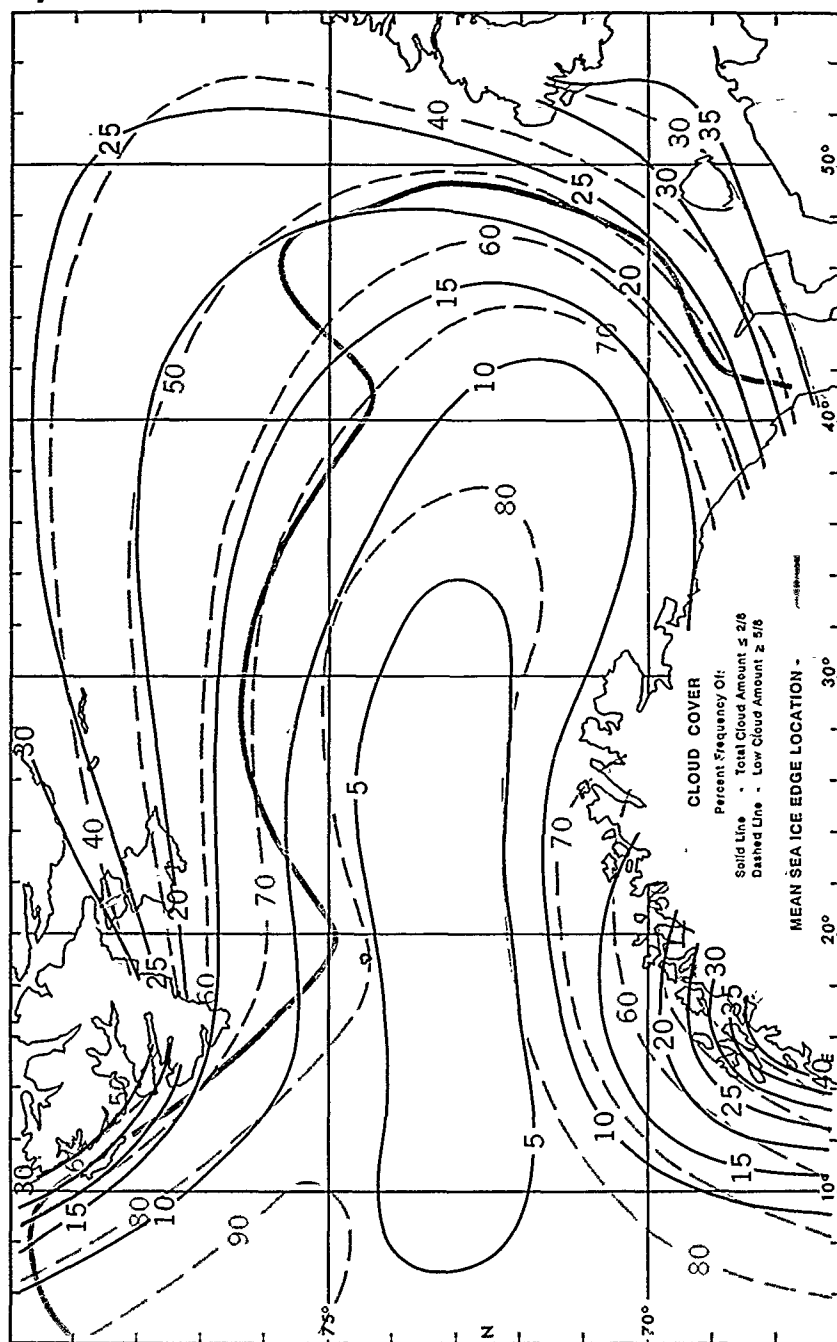
March

Wave Height



April

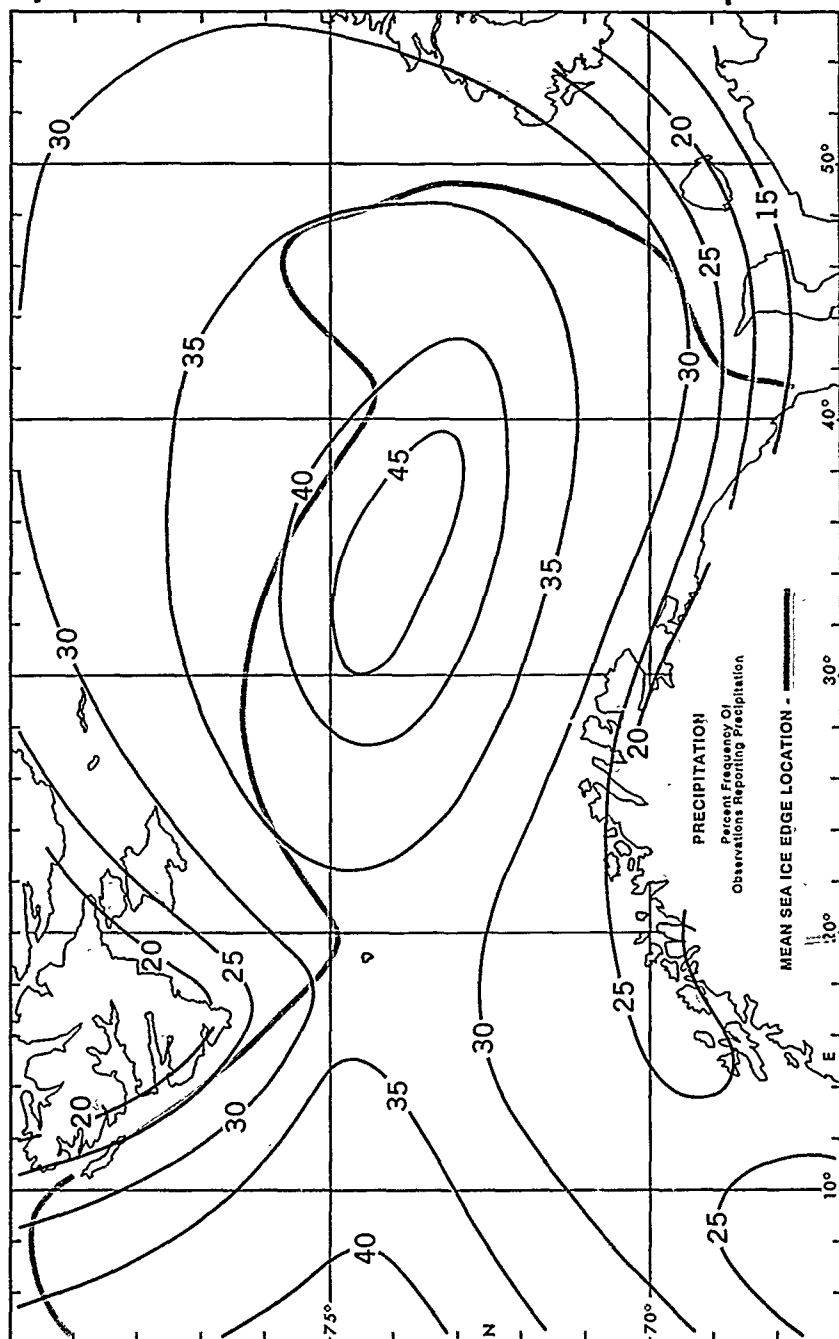
Clouds



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

April

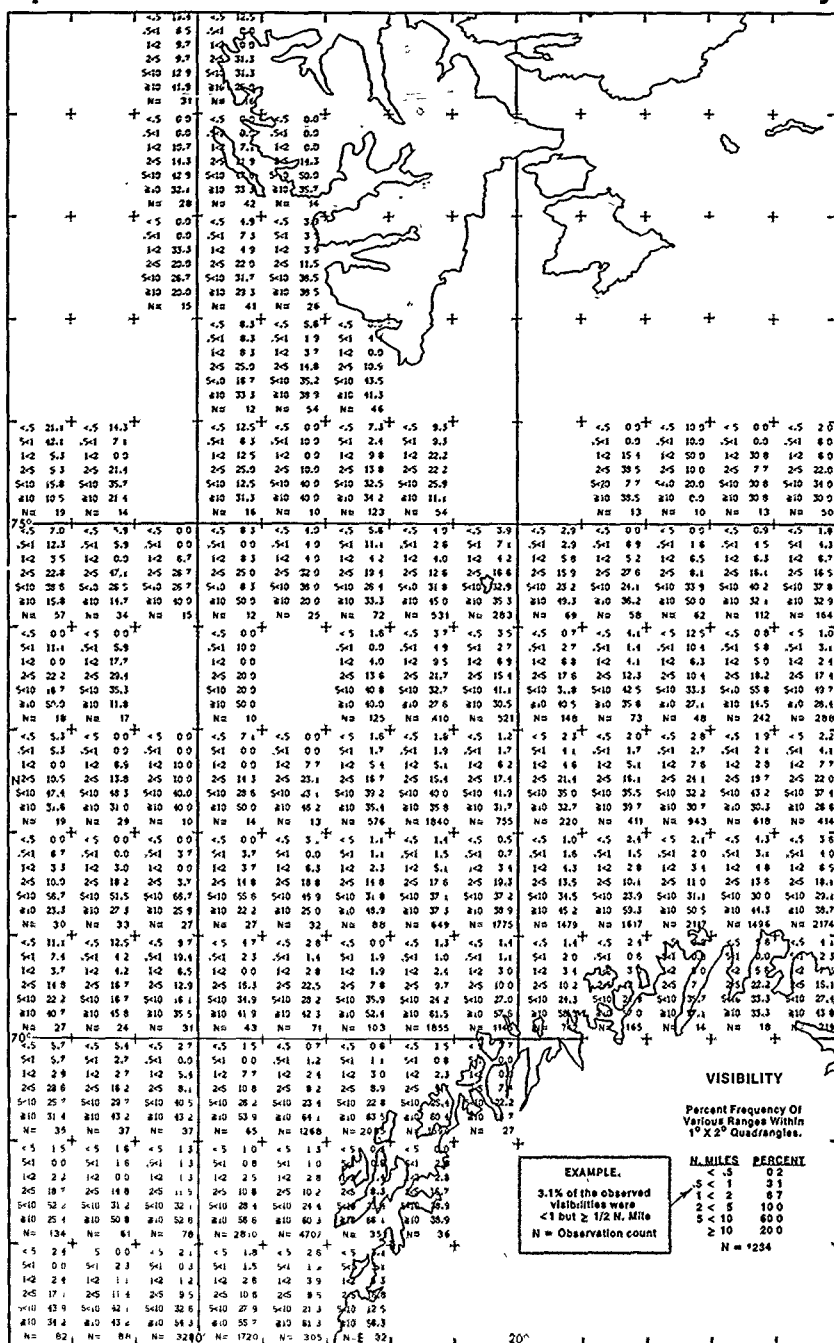
Precipitation



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

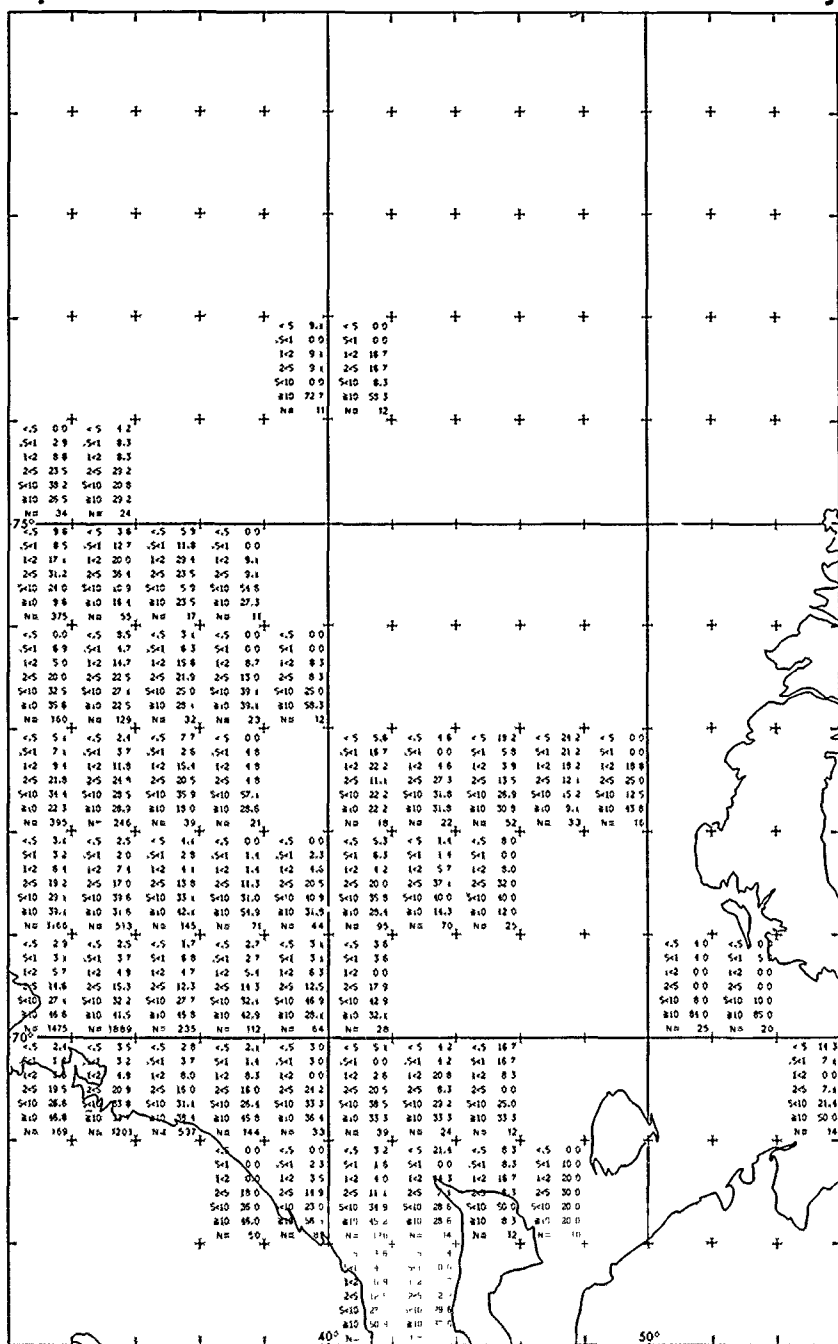
April

Visibility



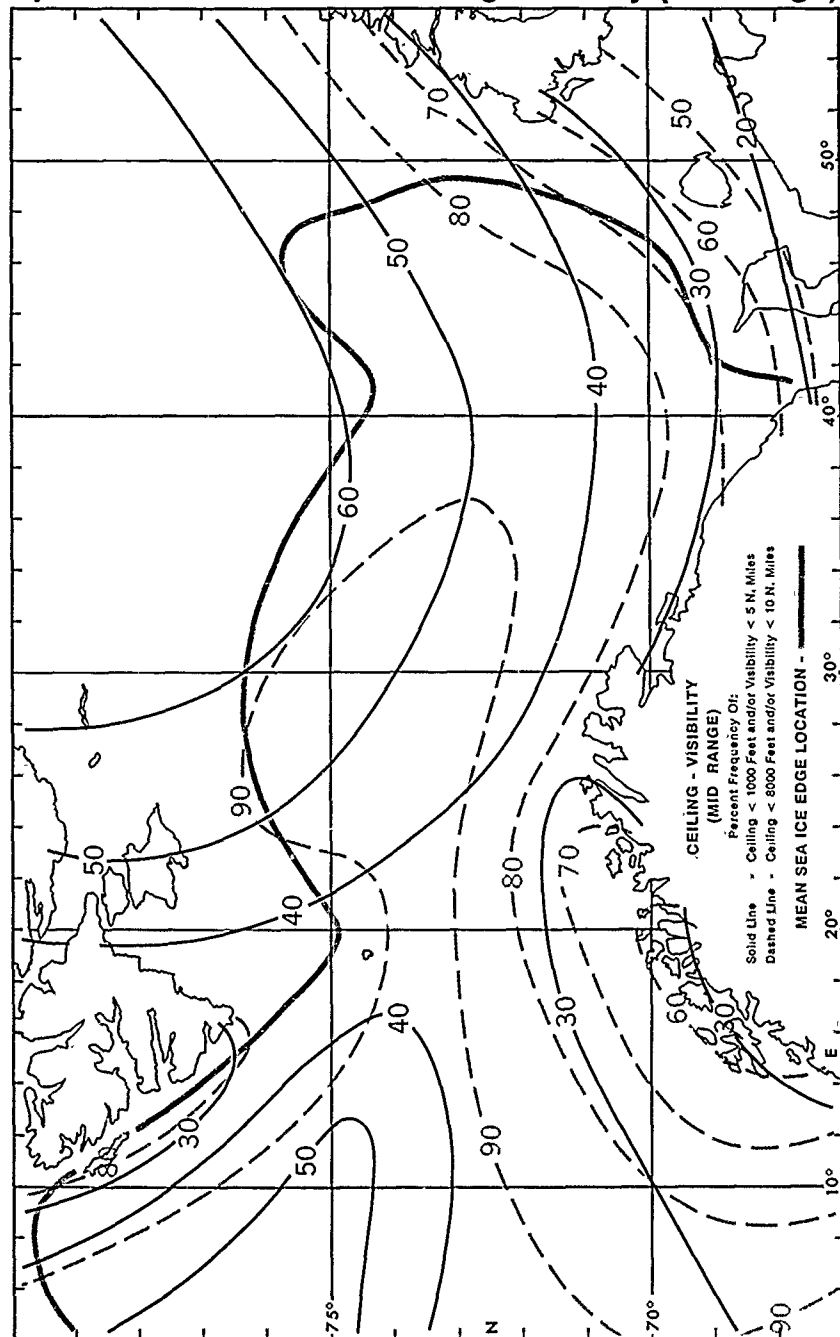
April

Visibility



April

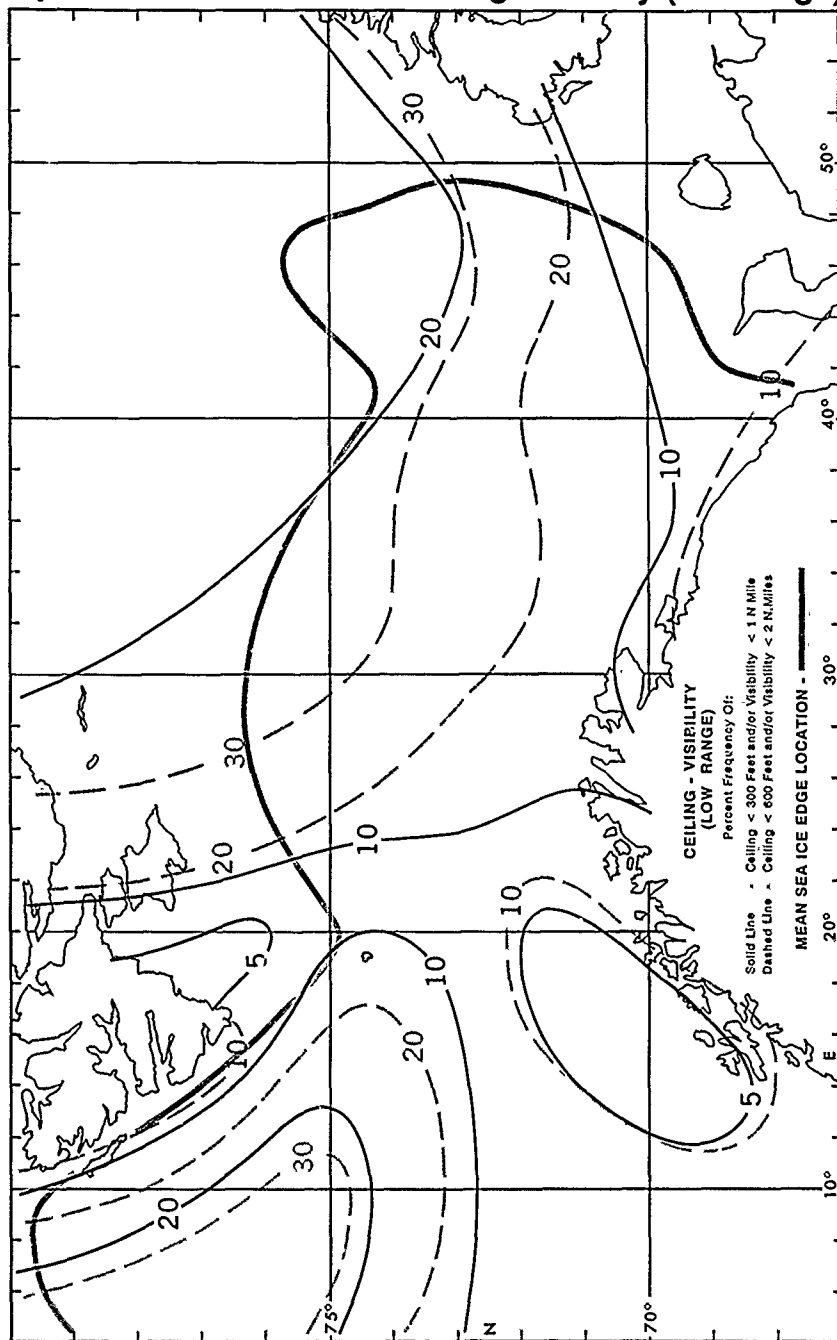
Ceiling-Visibility (mid range)



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

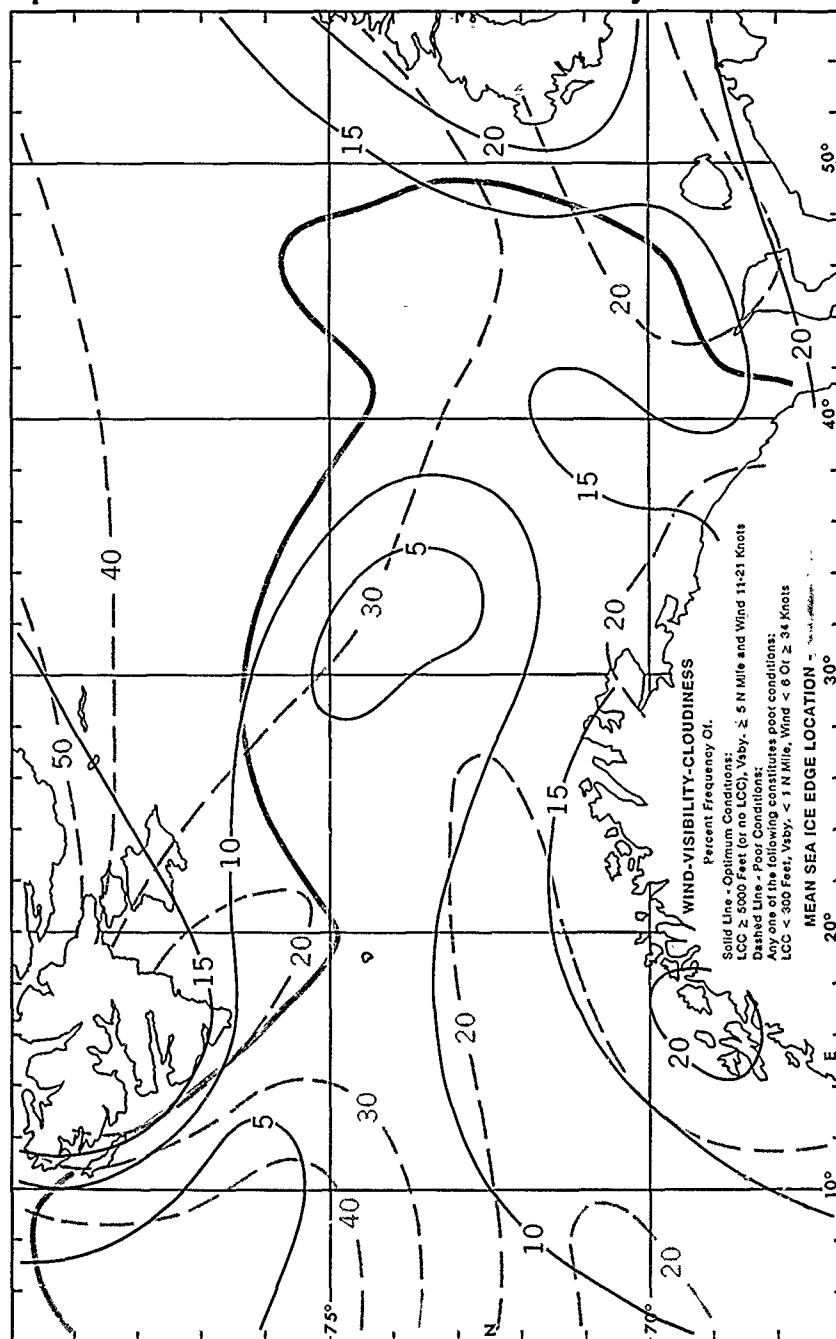
Ceiling-Visibility (low range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

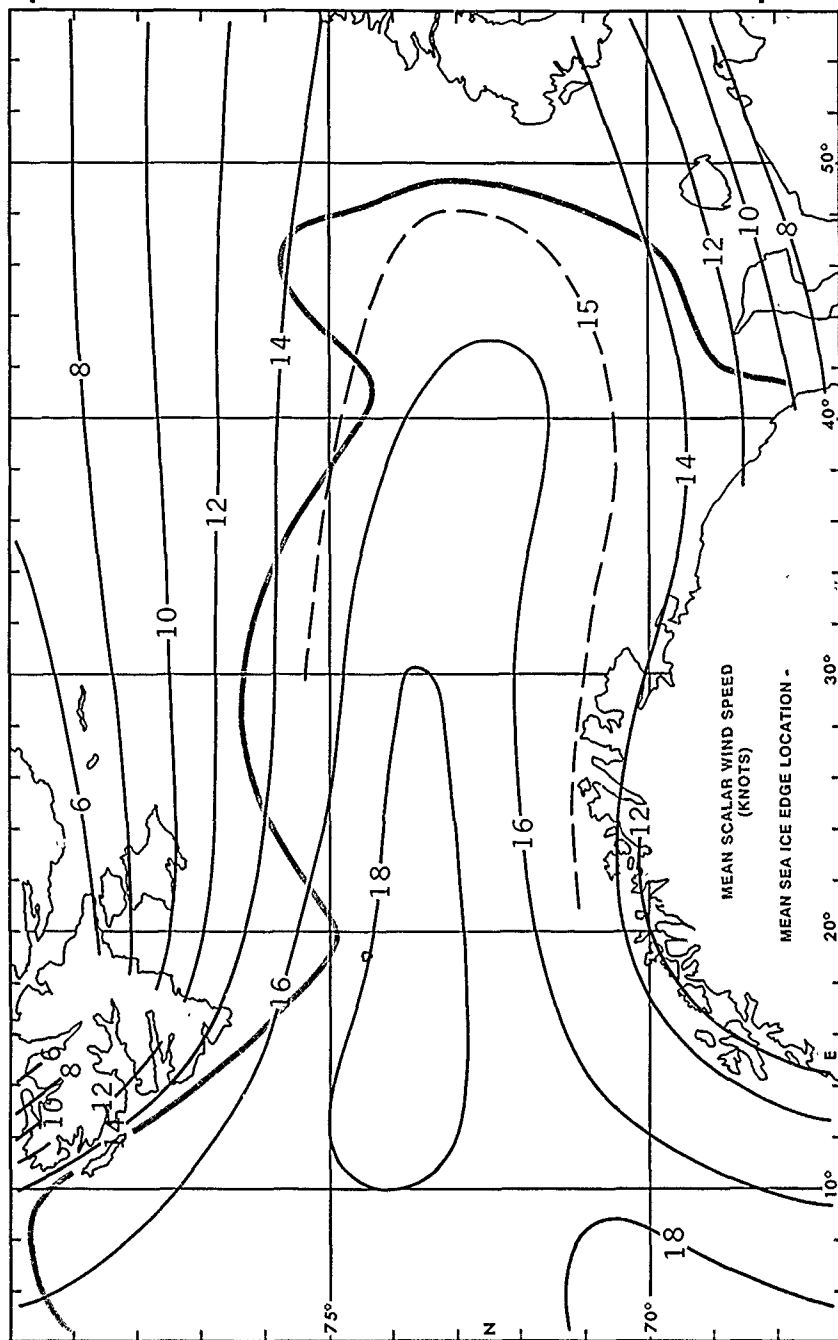
Wind-Visibility-Cloudiness



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

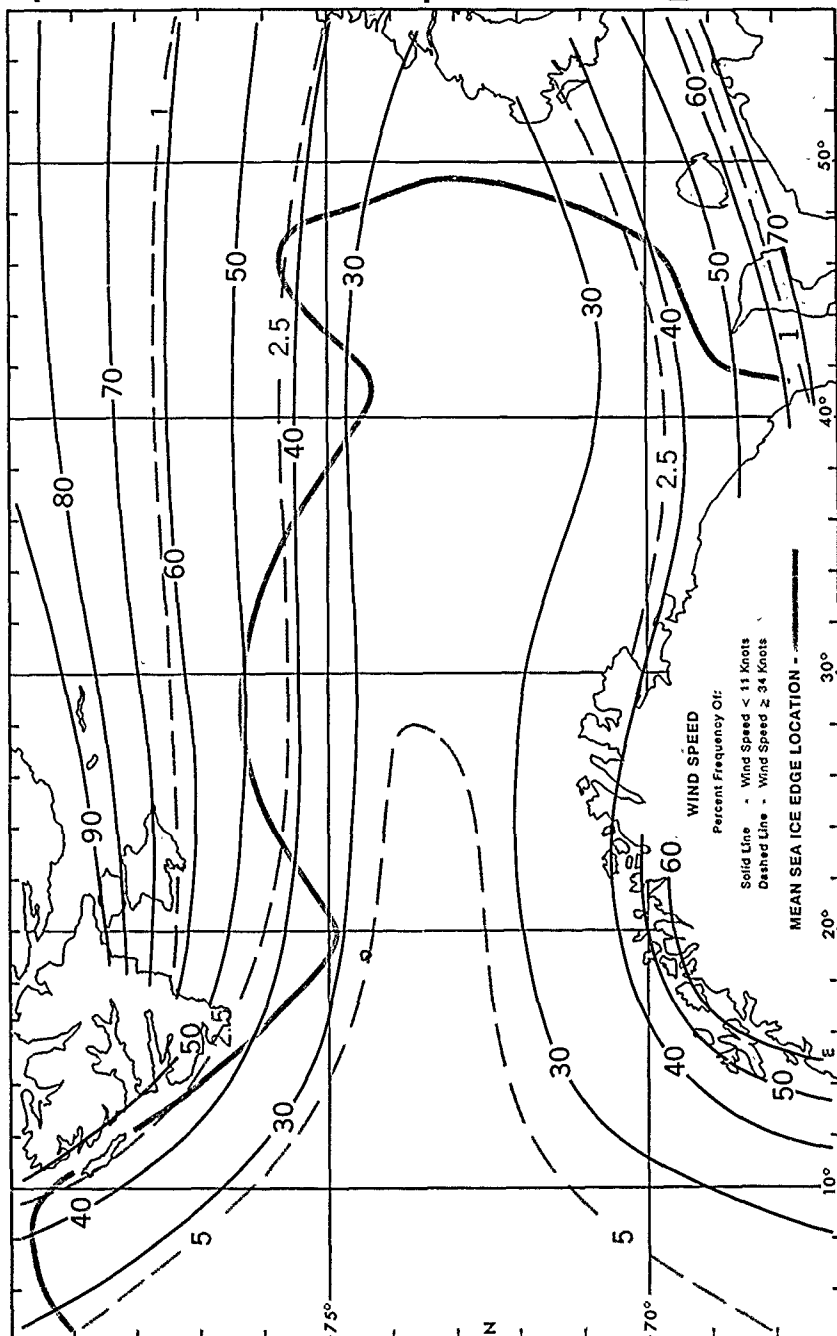
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

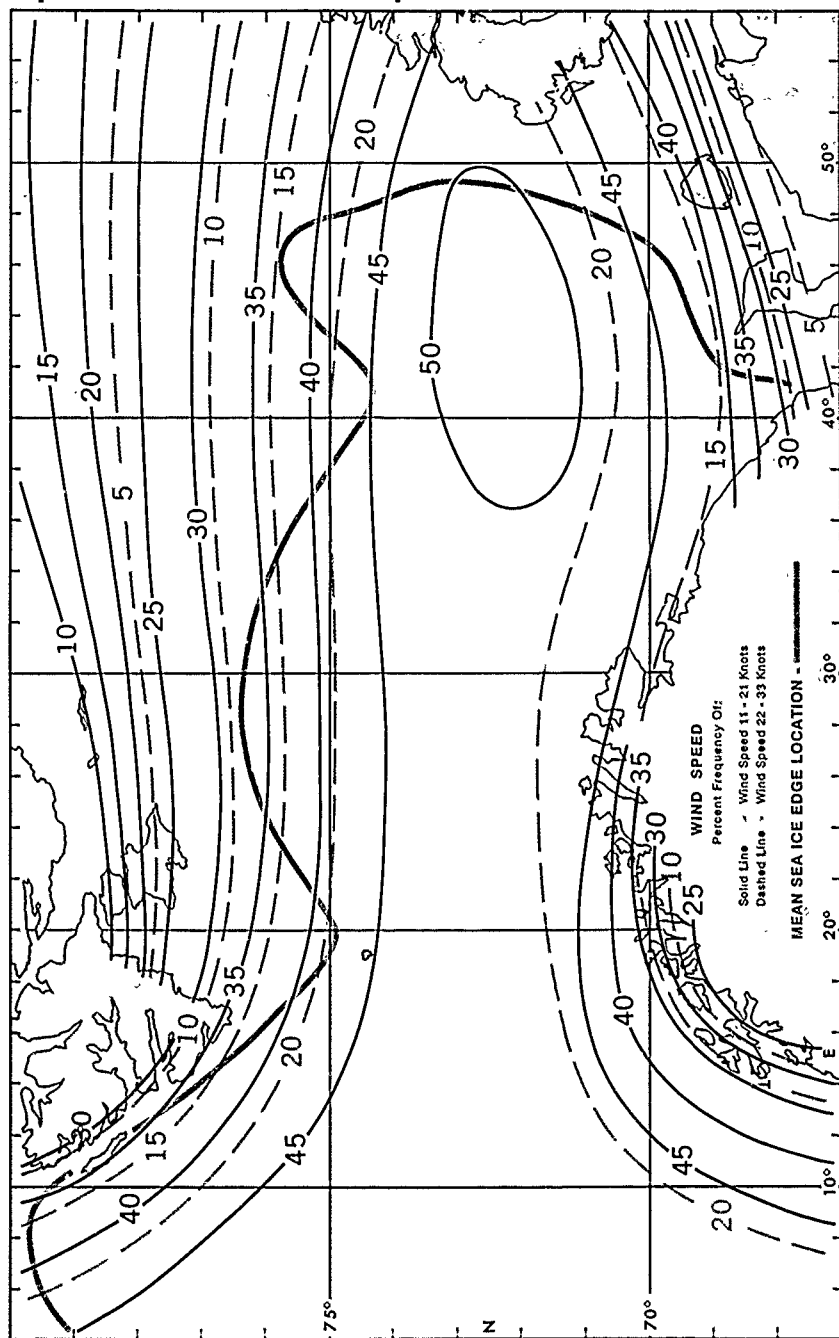
Wind Speed < 11 and ≥ 34 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

April

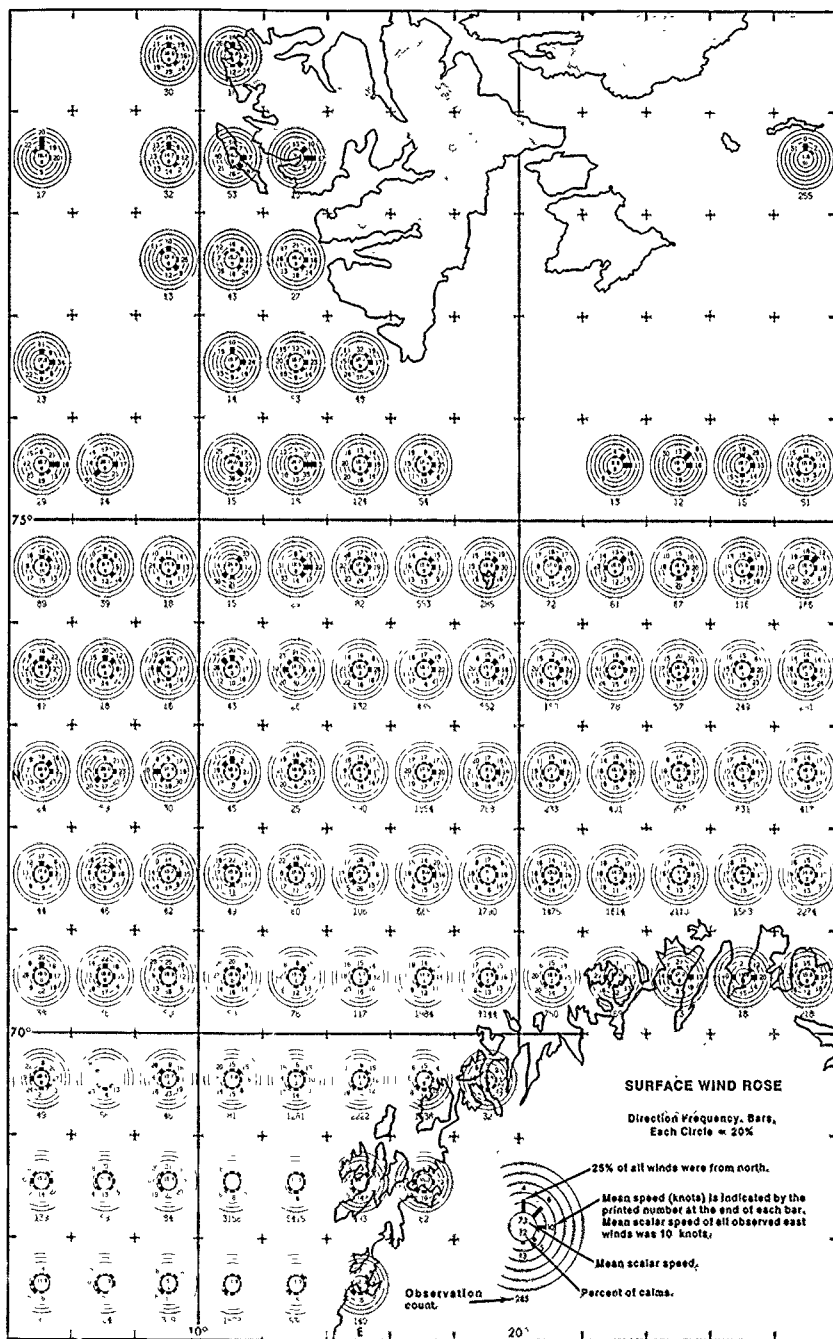
Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

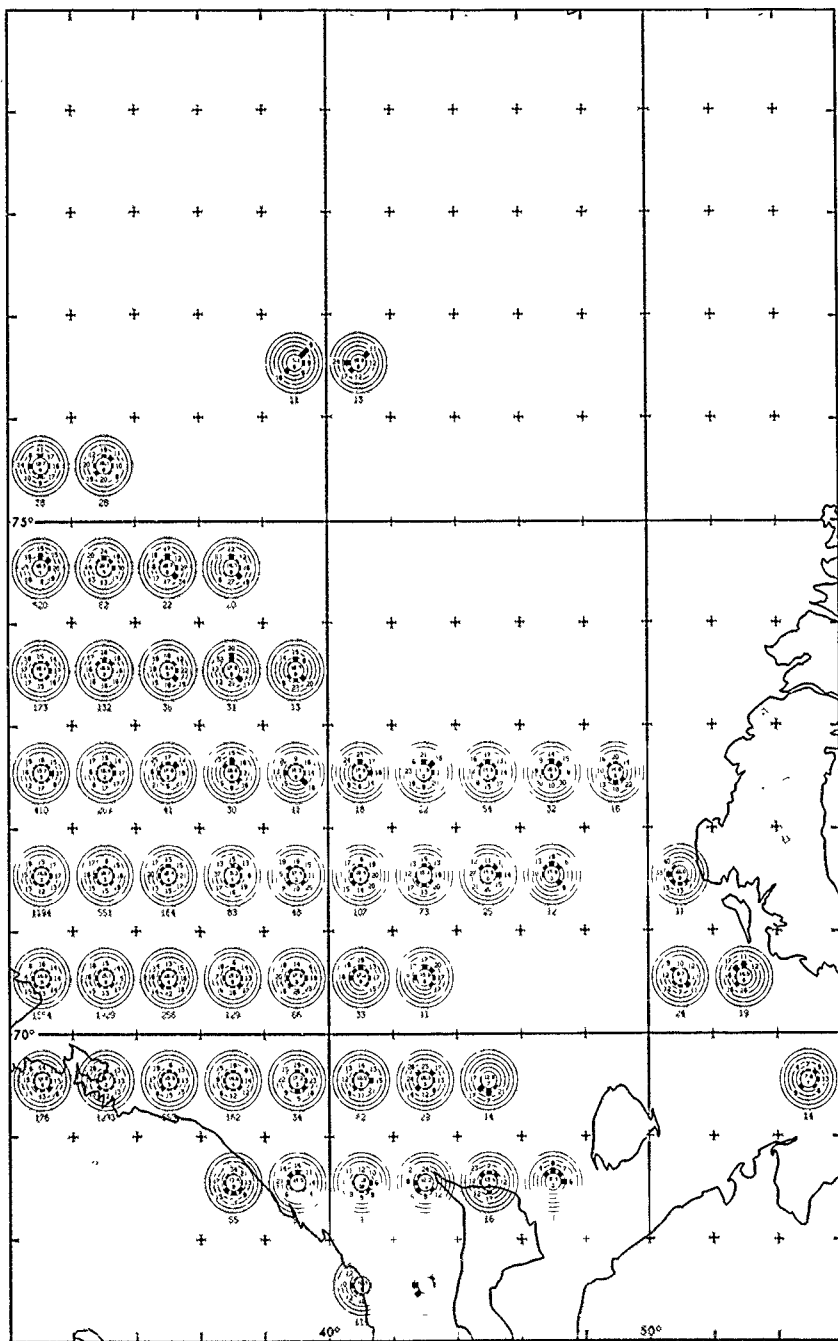
April

Surface Wind Roses



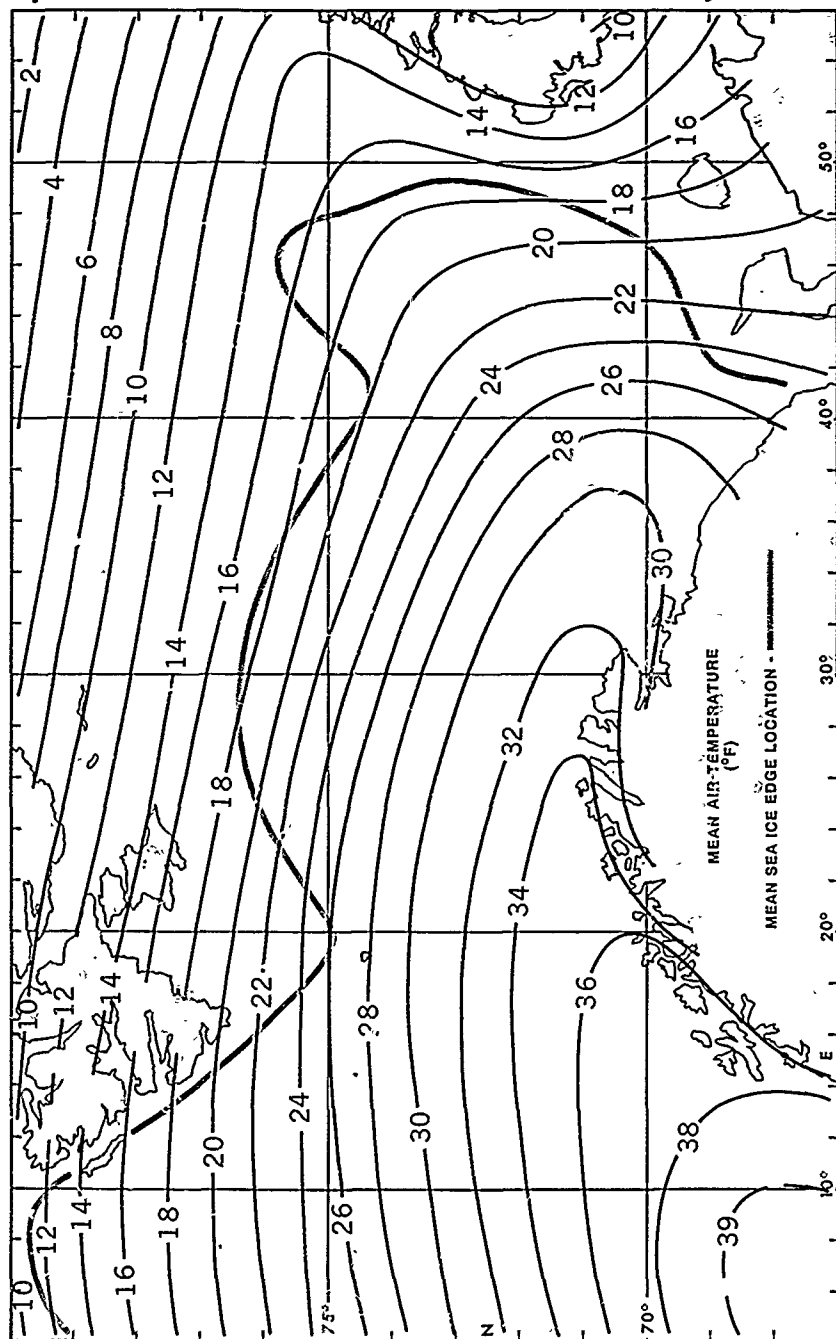
April

Surface Wind Roses



April

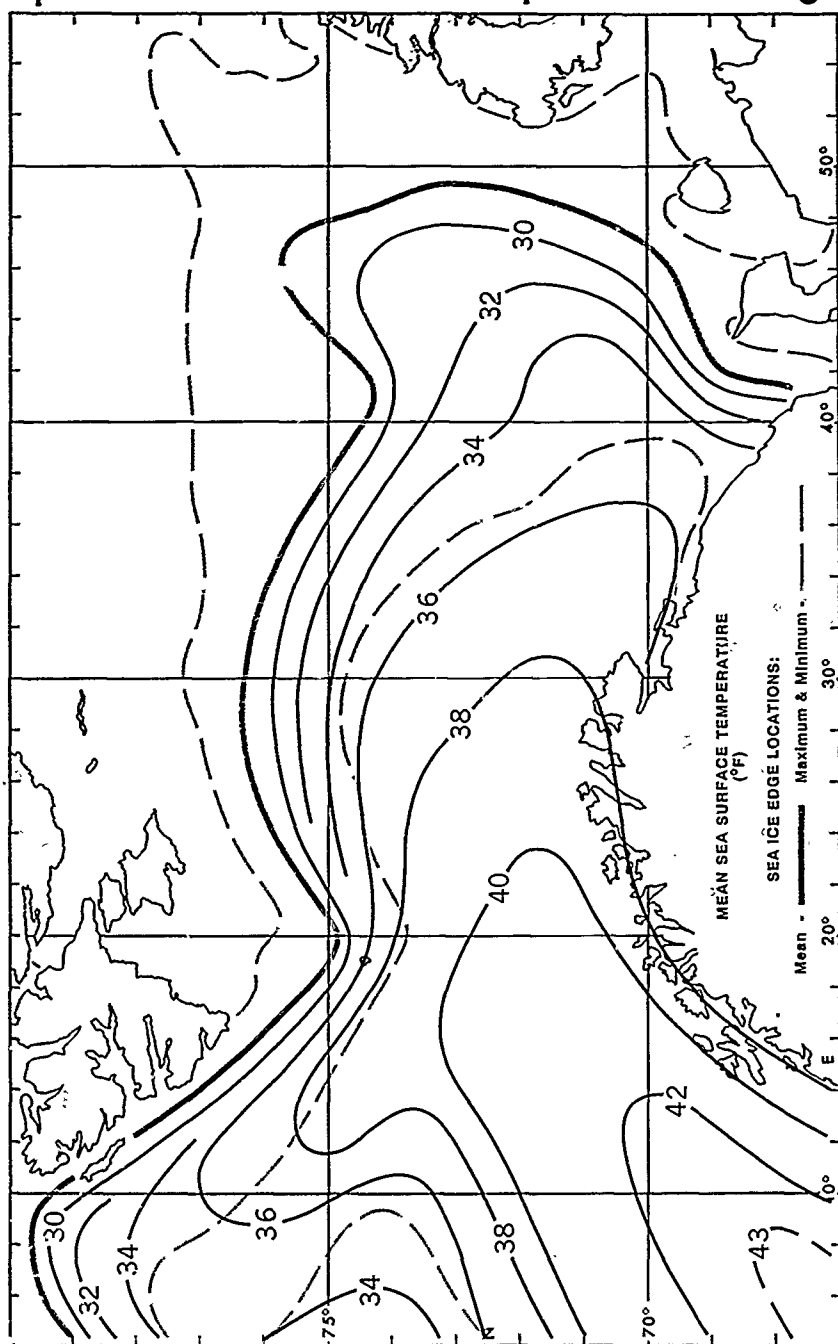
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

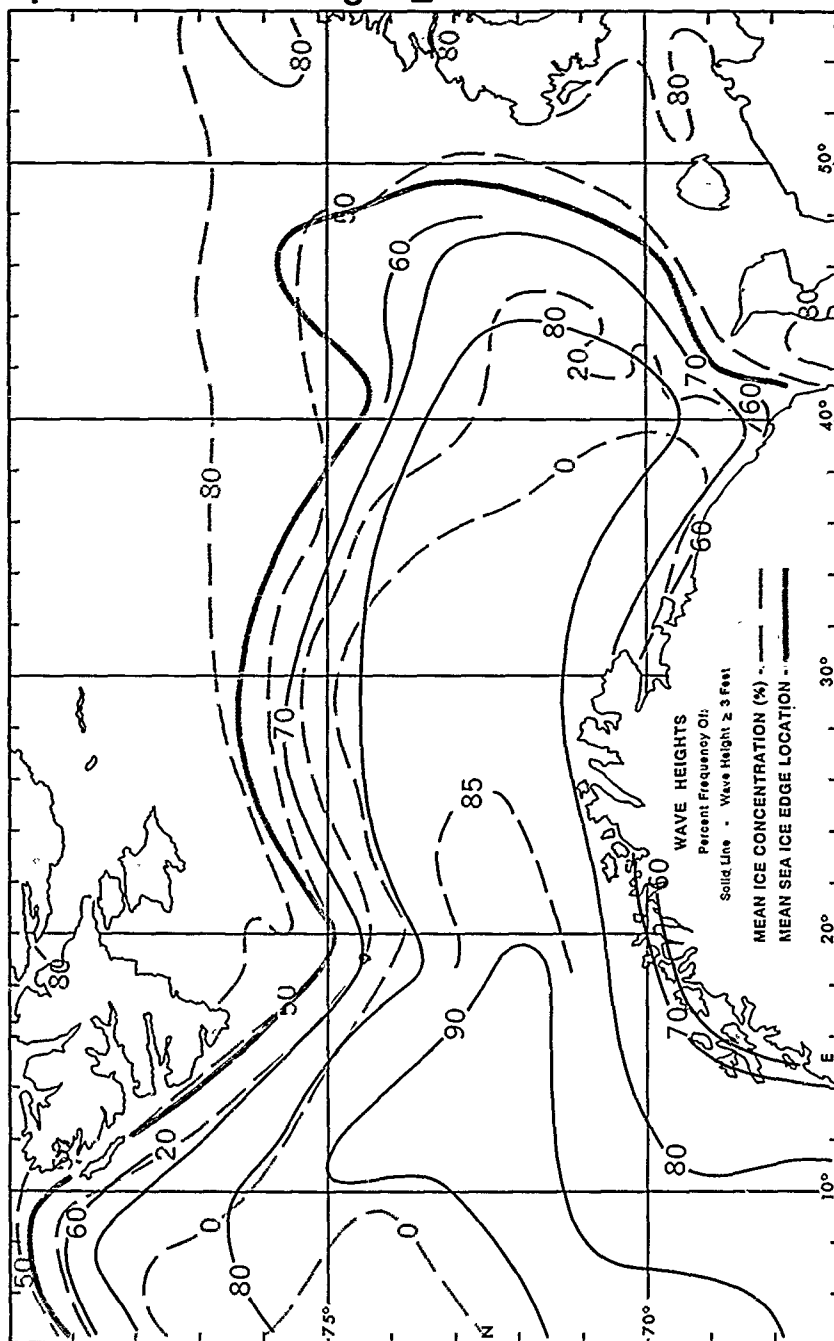
Mean Sea Temperature & Ice Edge



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

April

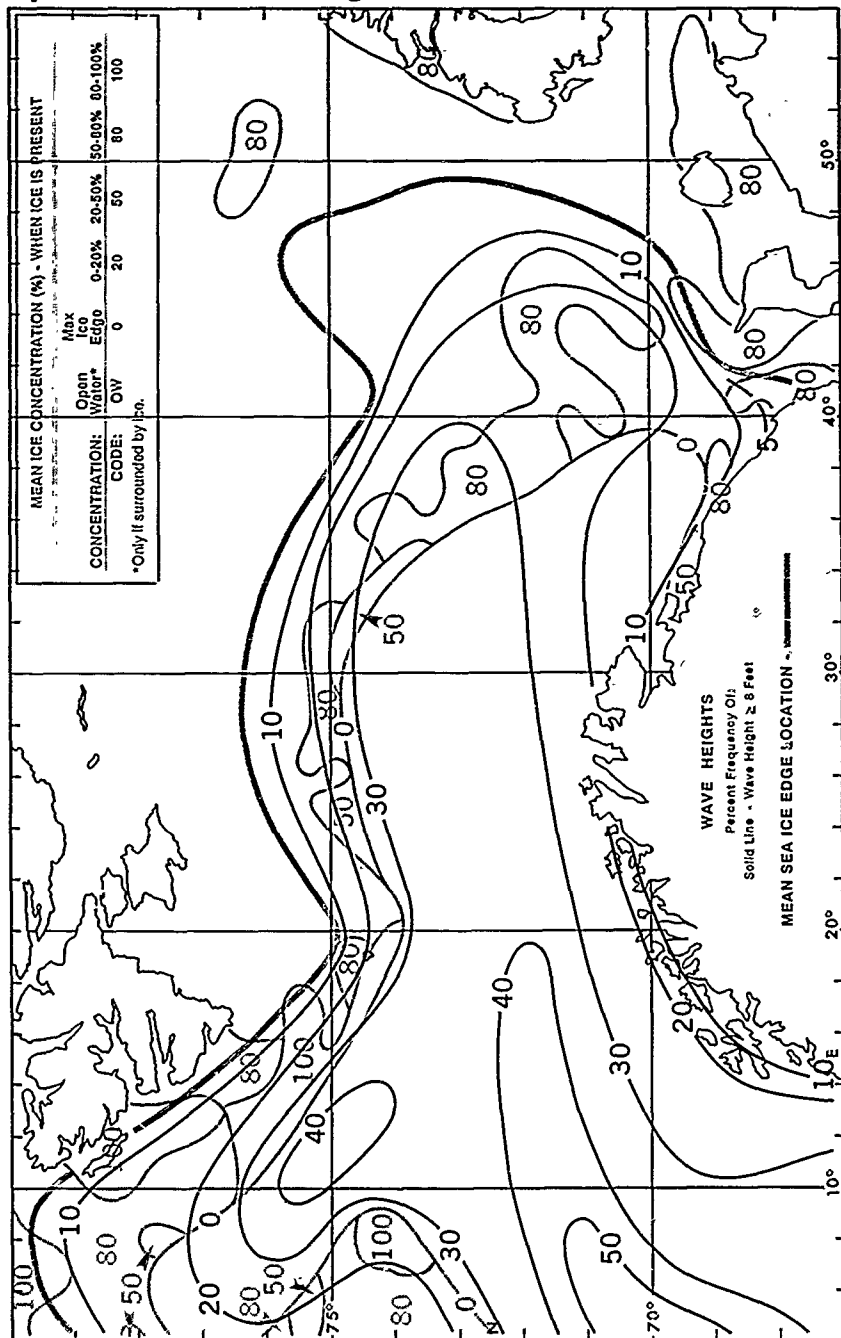
Wave Height ≥ 3 Ft. & Ice Concentration



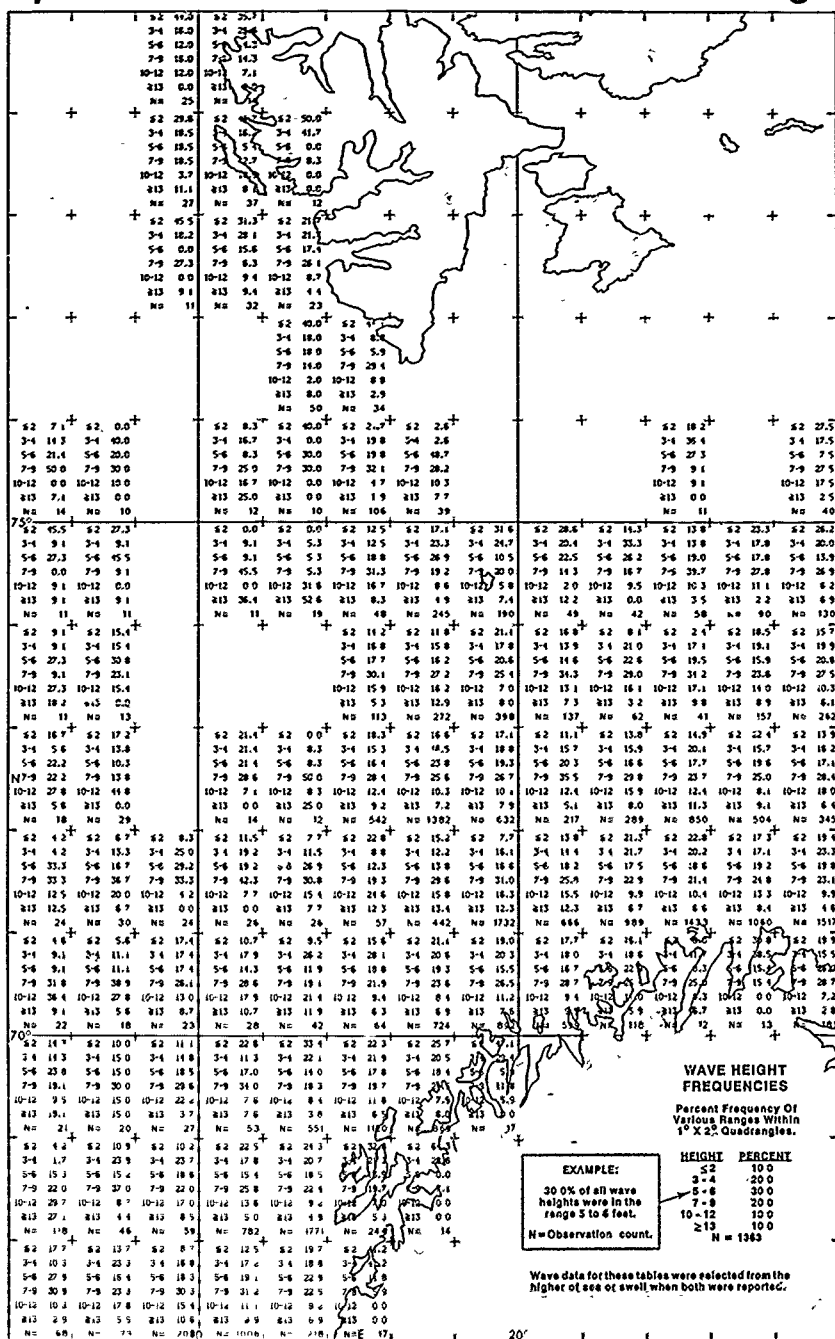
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observatio counts.

April

Wave Height ≥ 8 Ft. & Ice Concentration

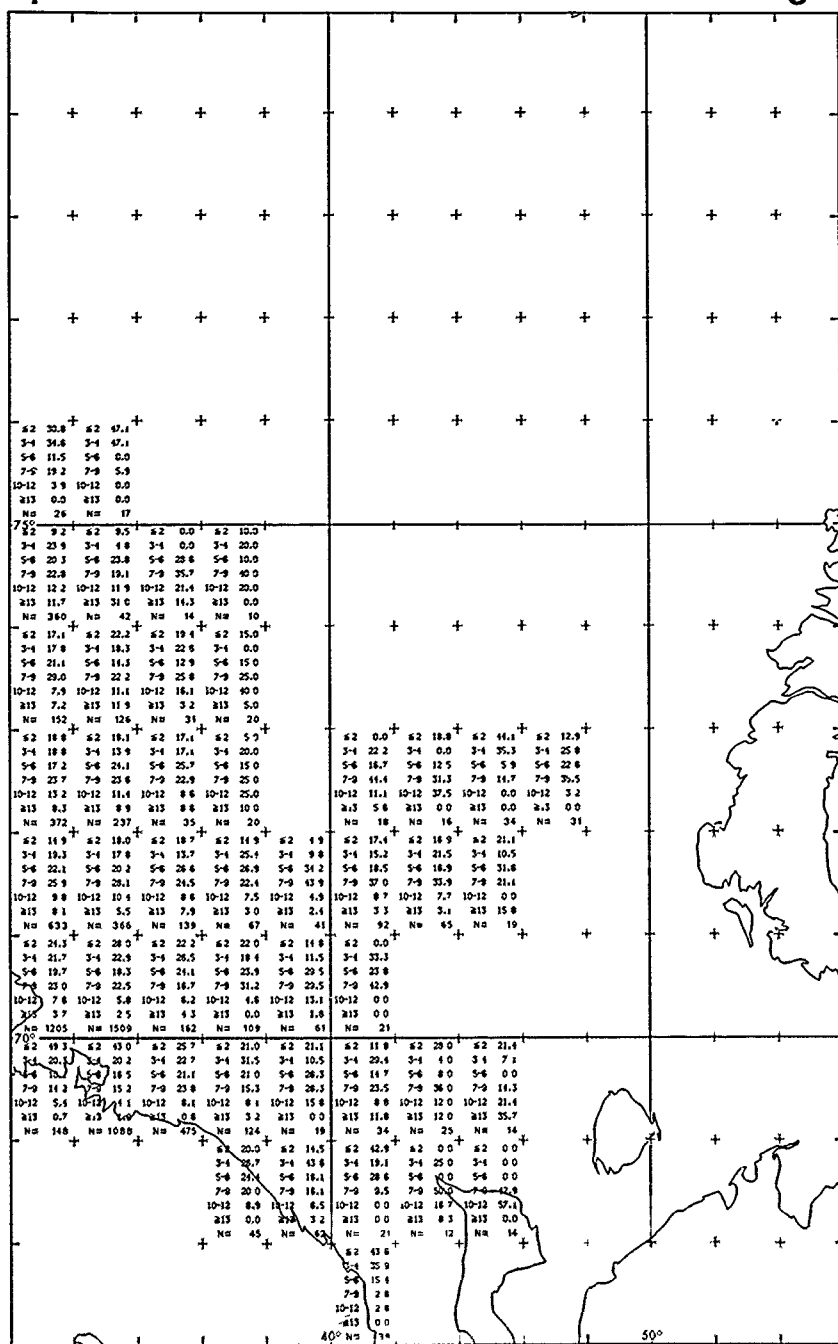


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.



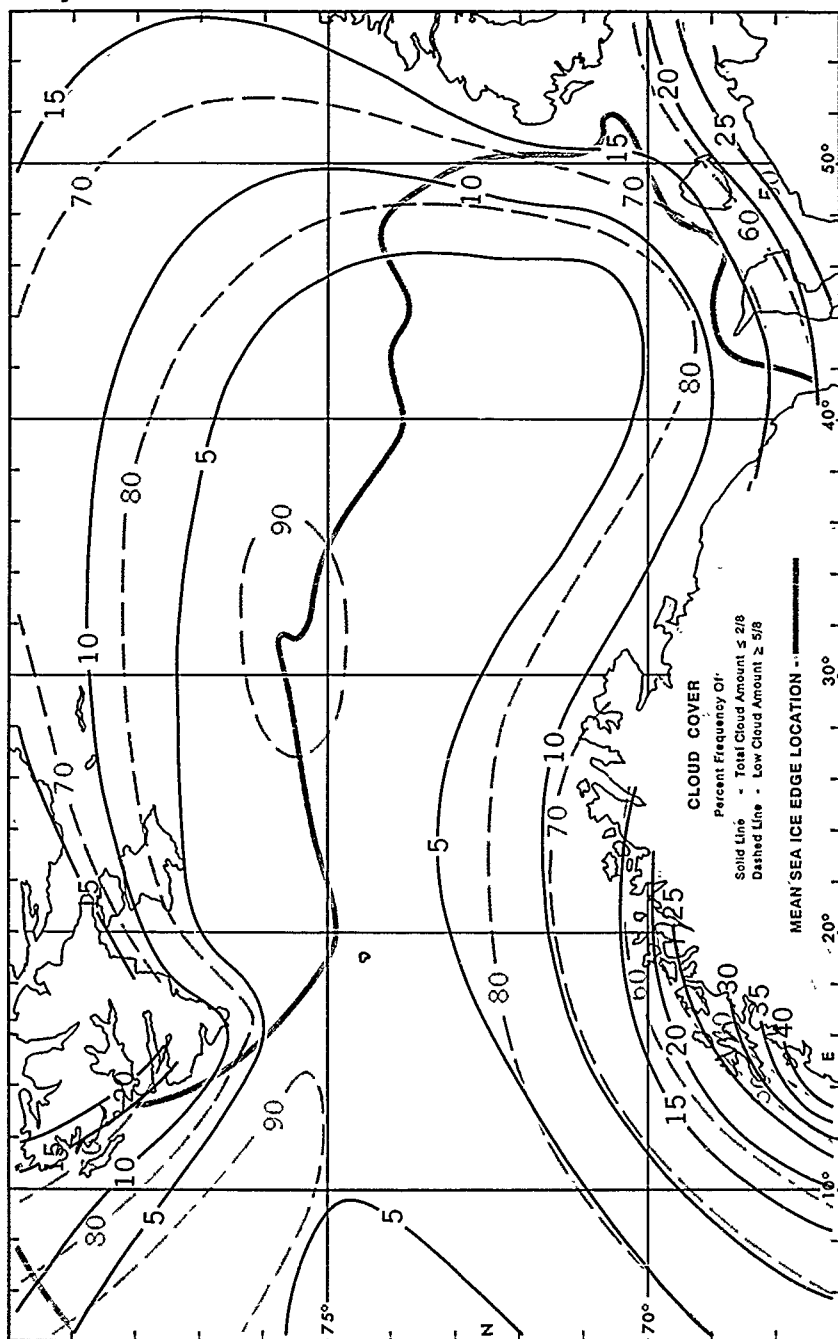
April

Wave Height



May

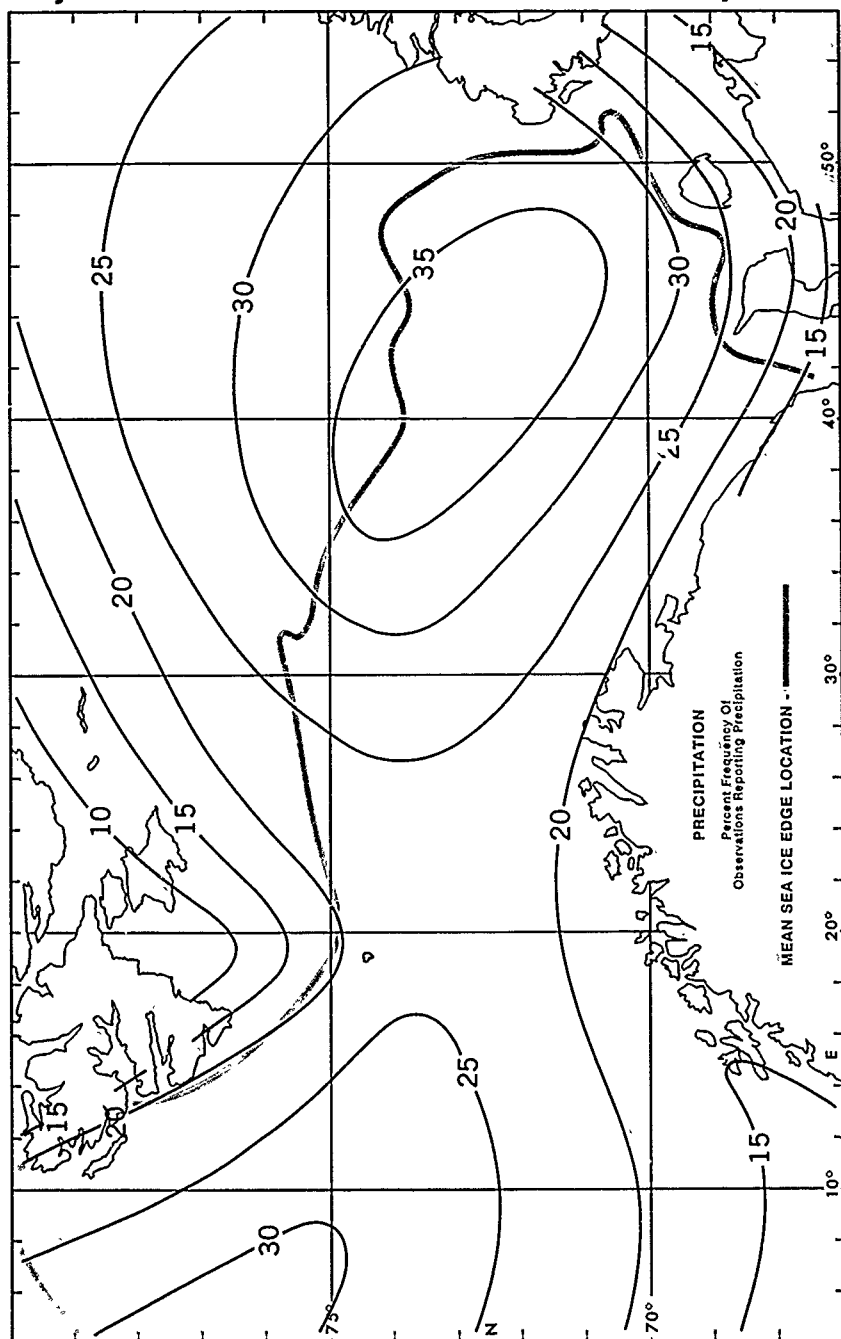
Clouds



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

May

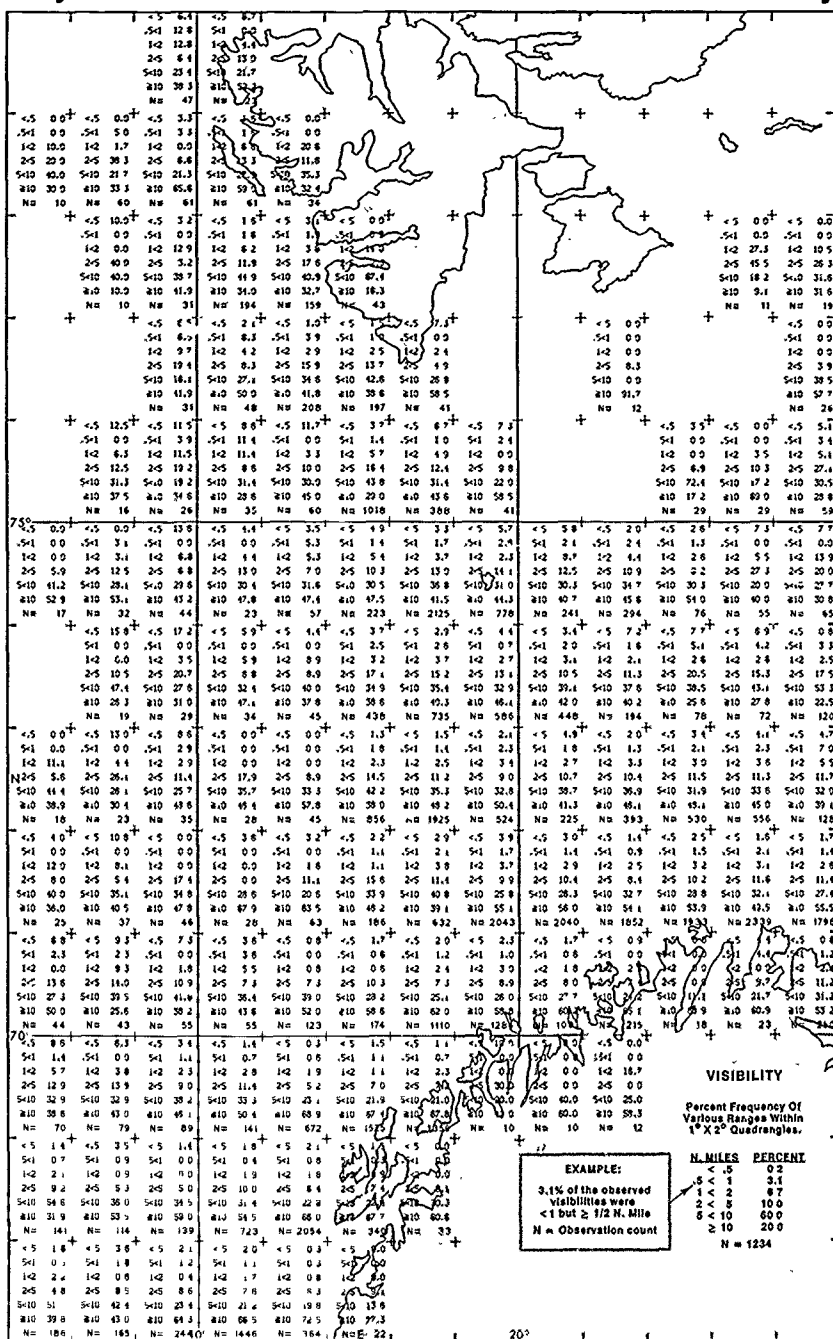
Precipitation



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

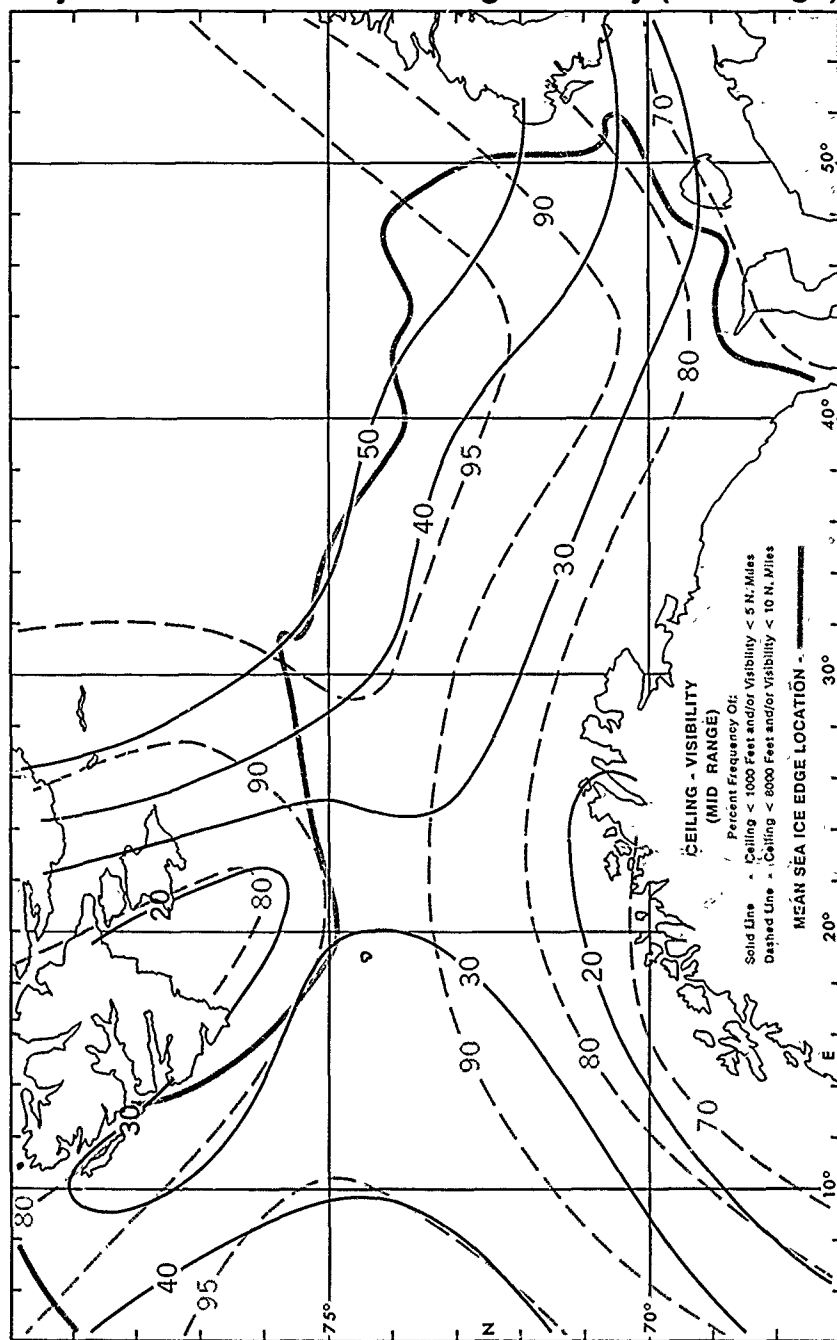
May

Visibility



May

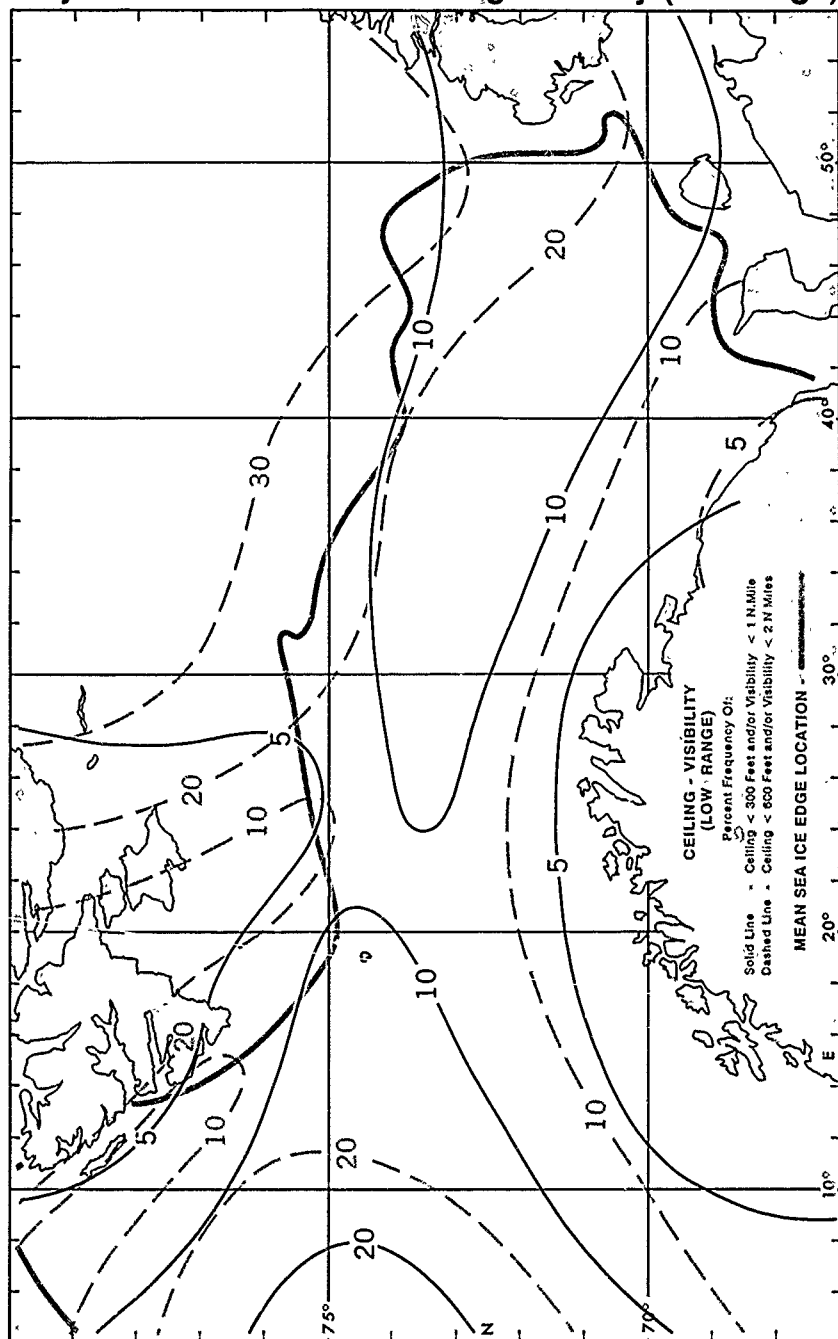
Ceiling-Visibility (mid range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

May

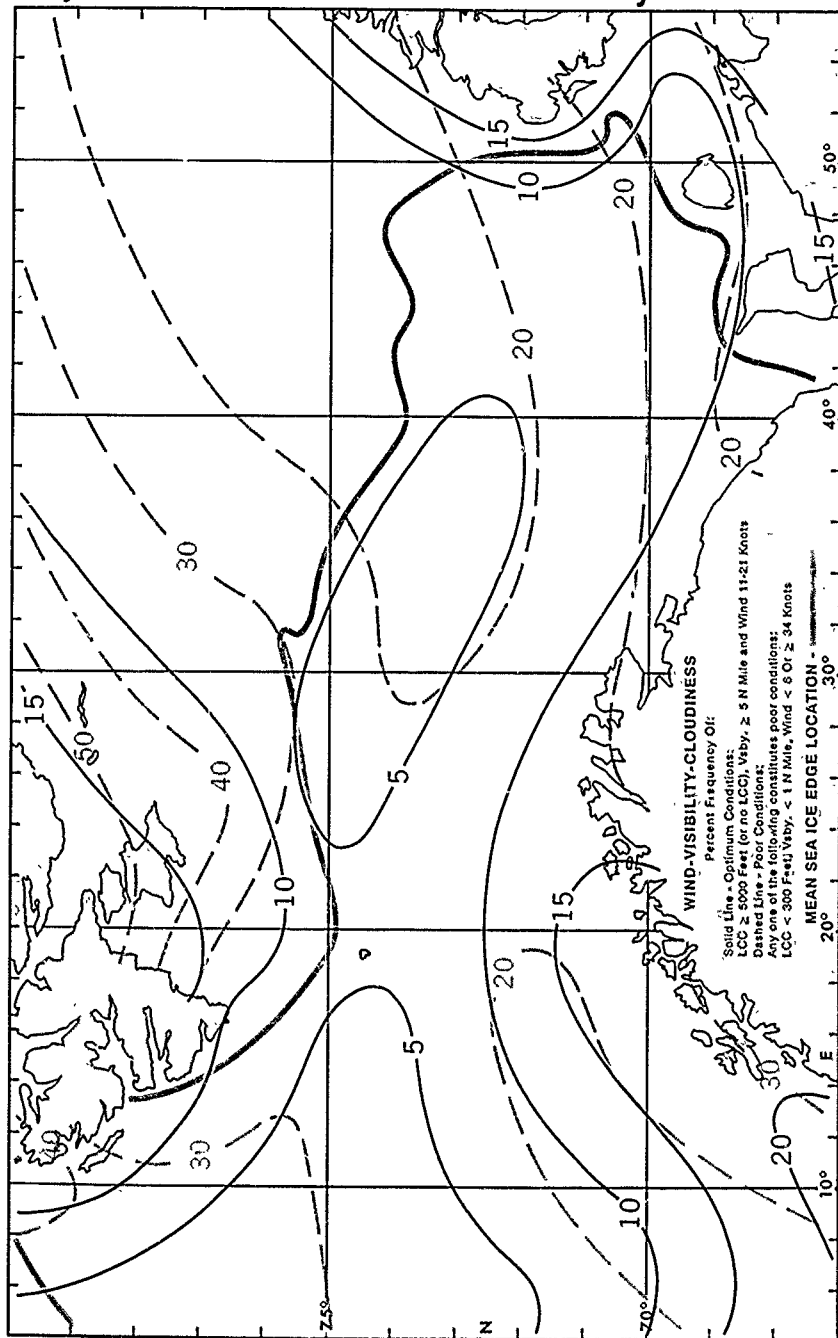
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

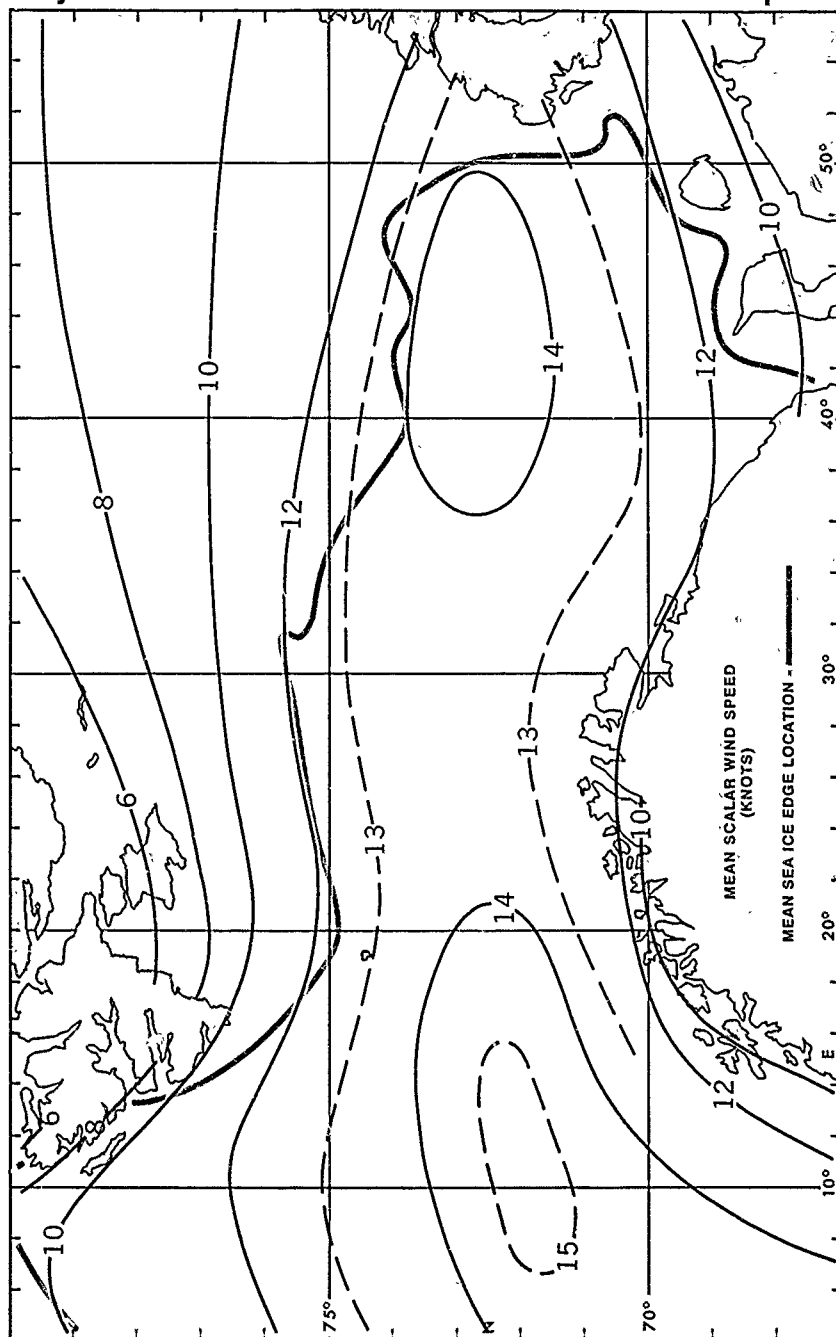
May

Wind-Visibility-Cloudiness



May

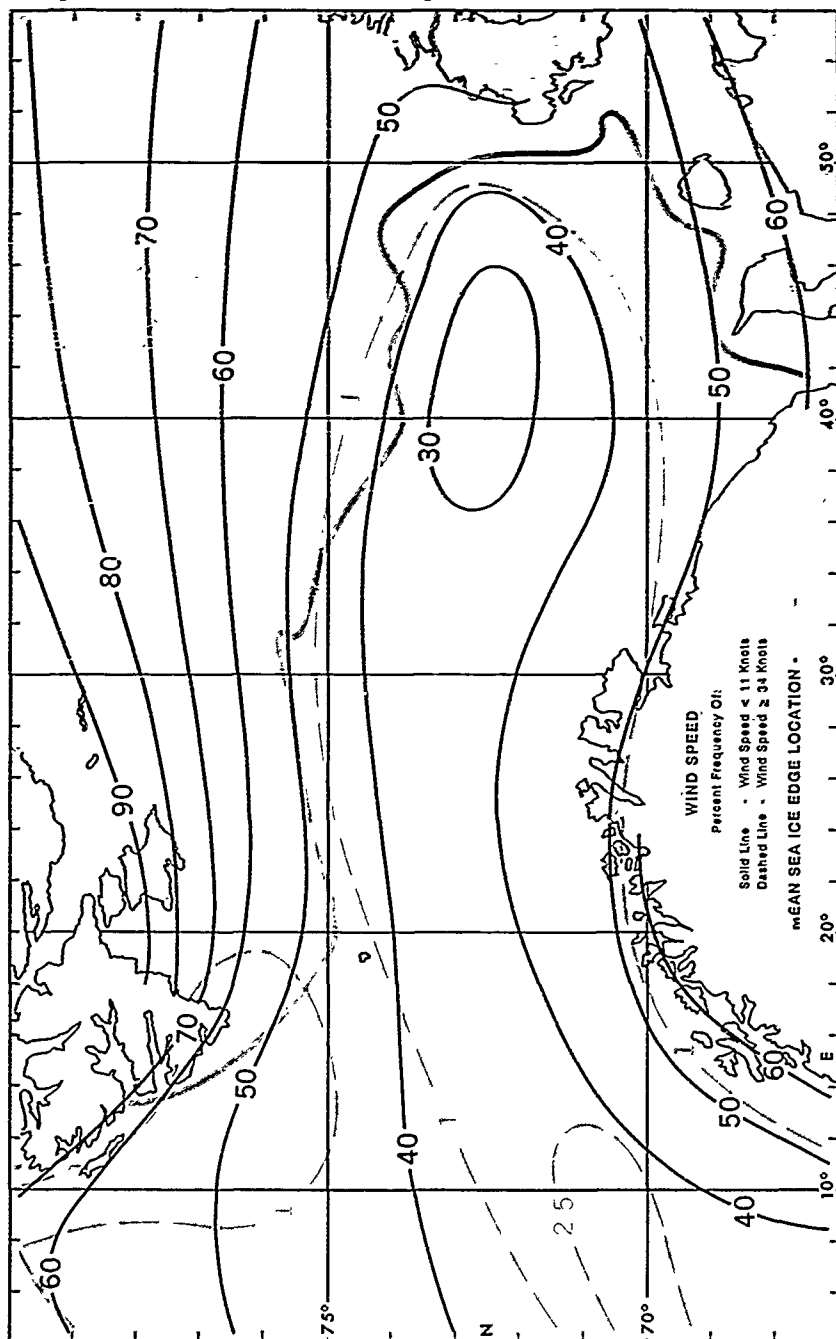
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

May

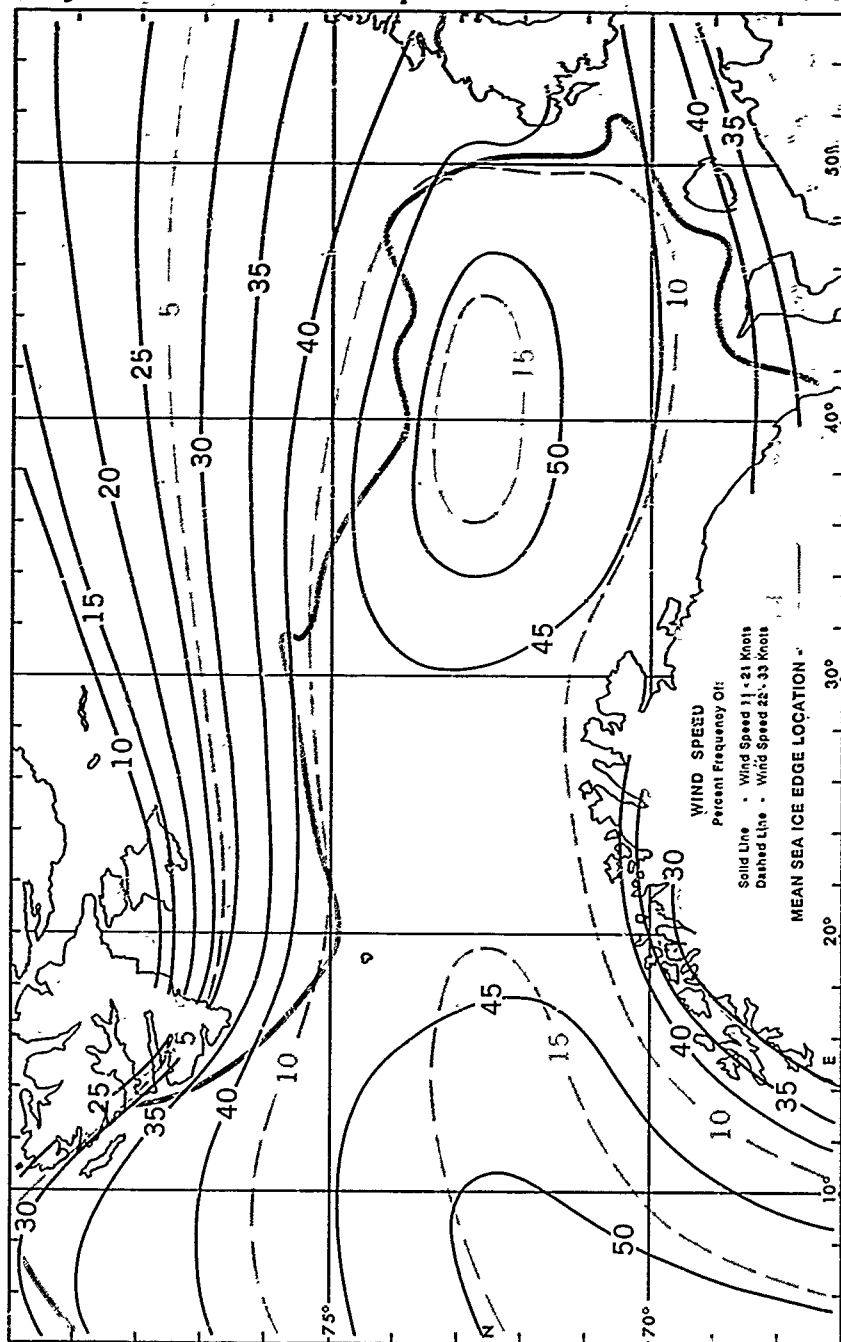
Wind Speed < 11 and ≥ 34 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

May

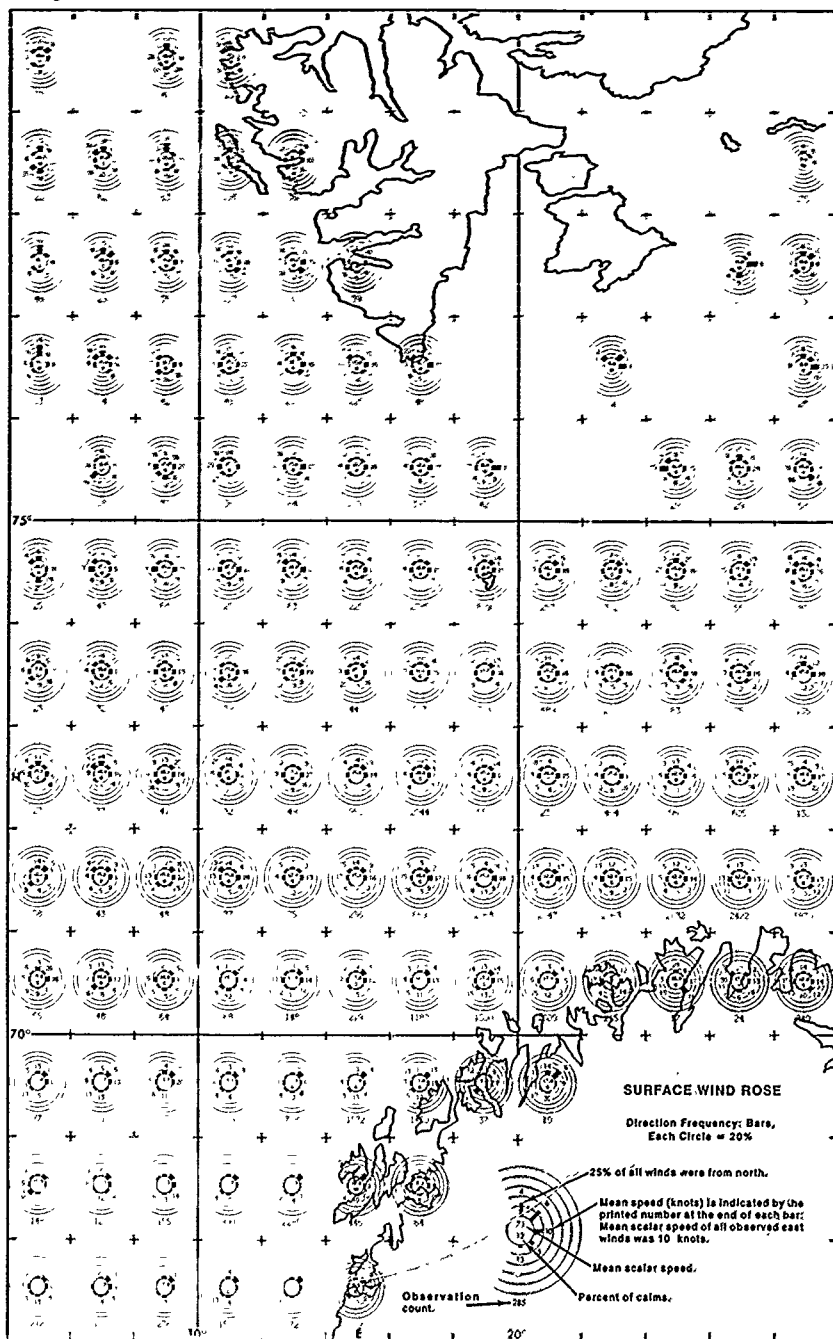
Wind Speed 11-21 and 22-33 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

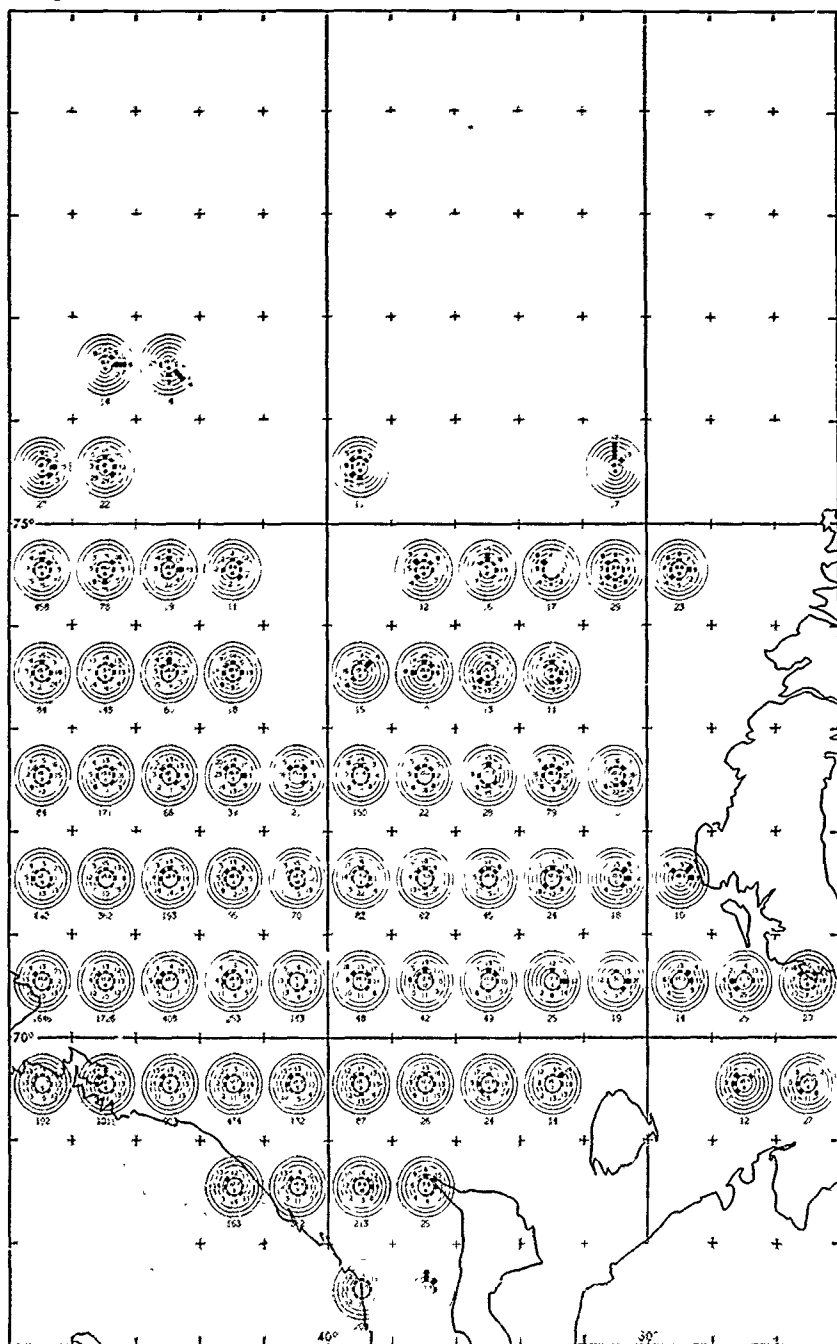
May

Surface Wind Roses



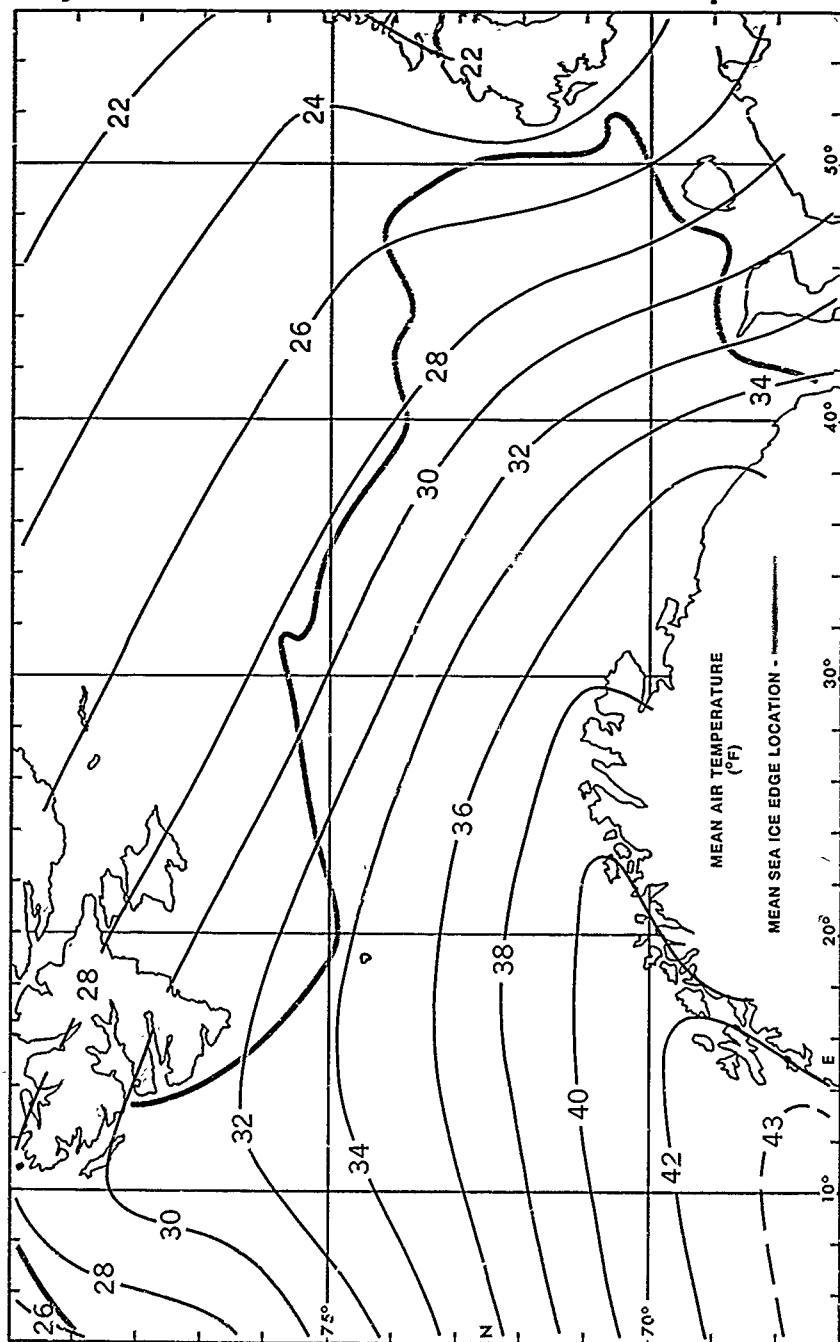
May

Surface Wind Roses



May

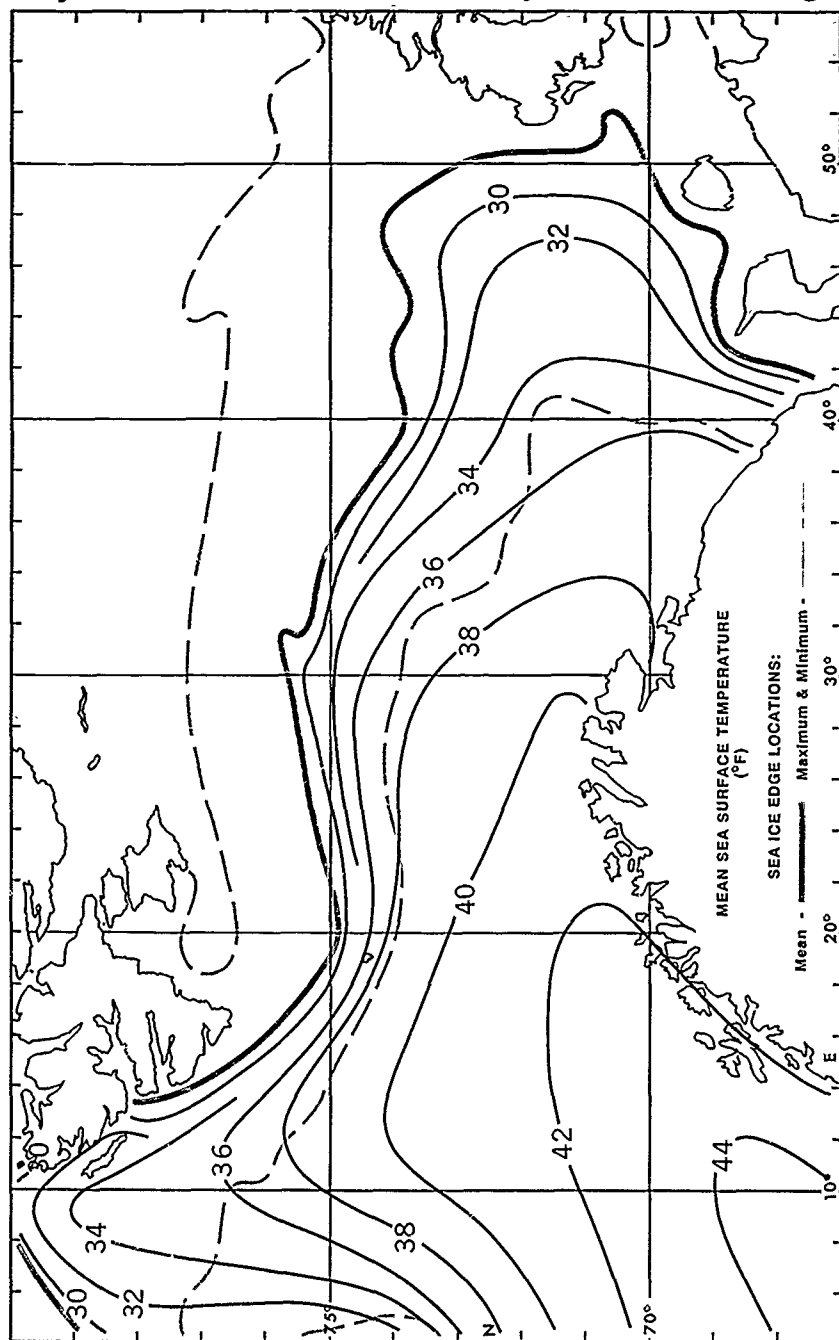
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

May

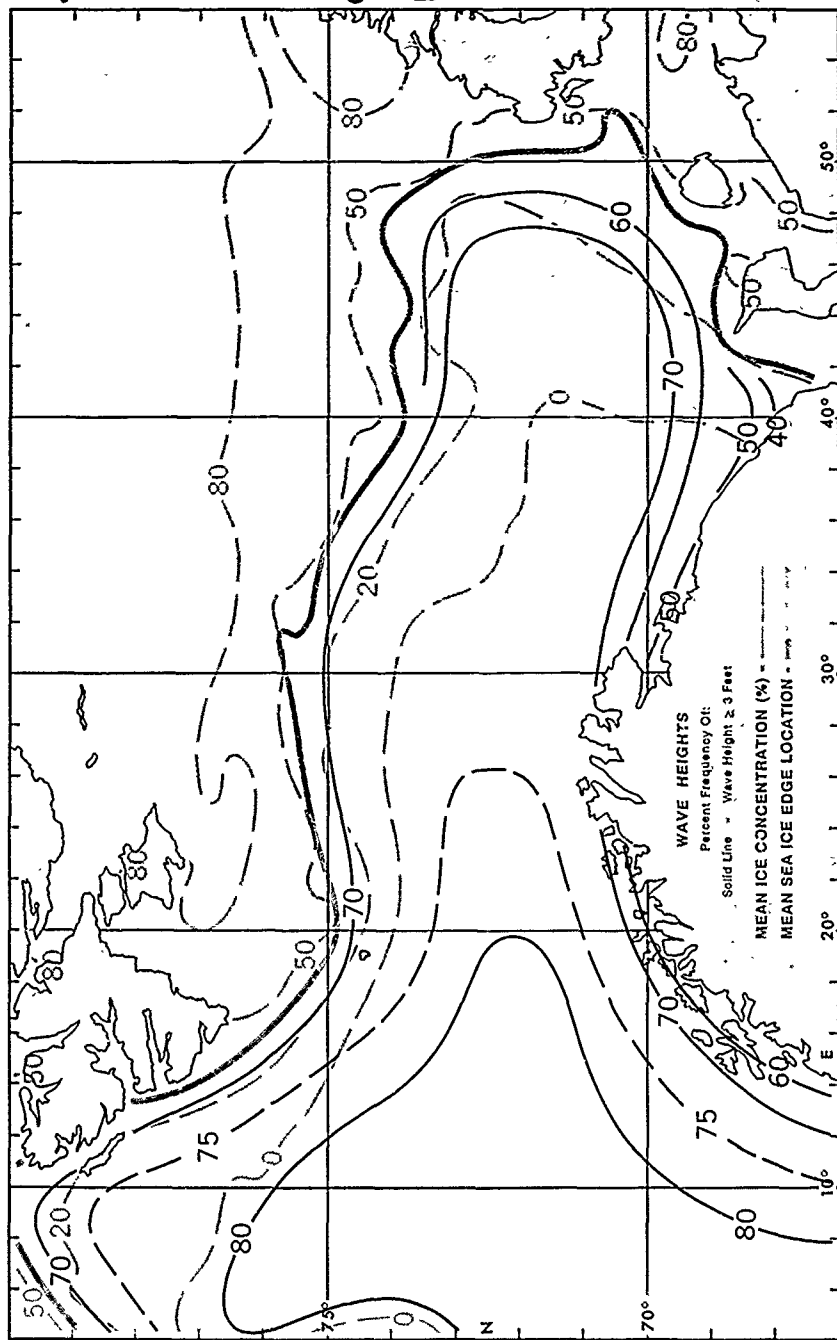
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

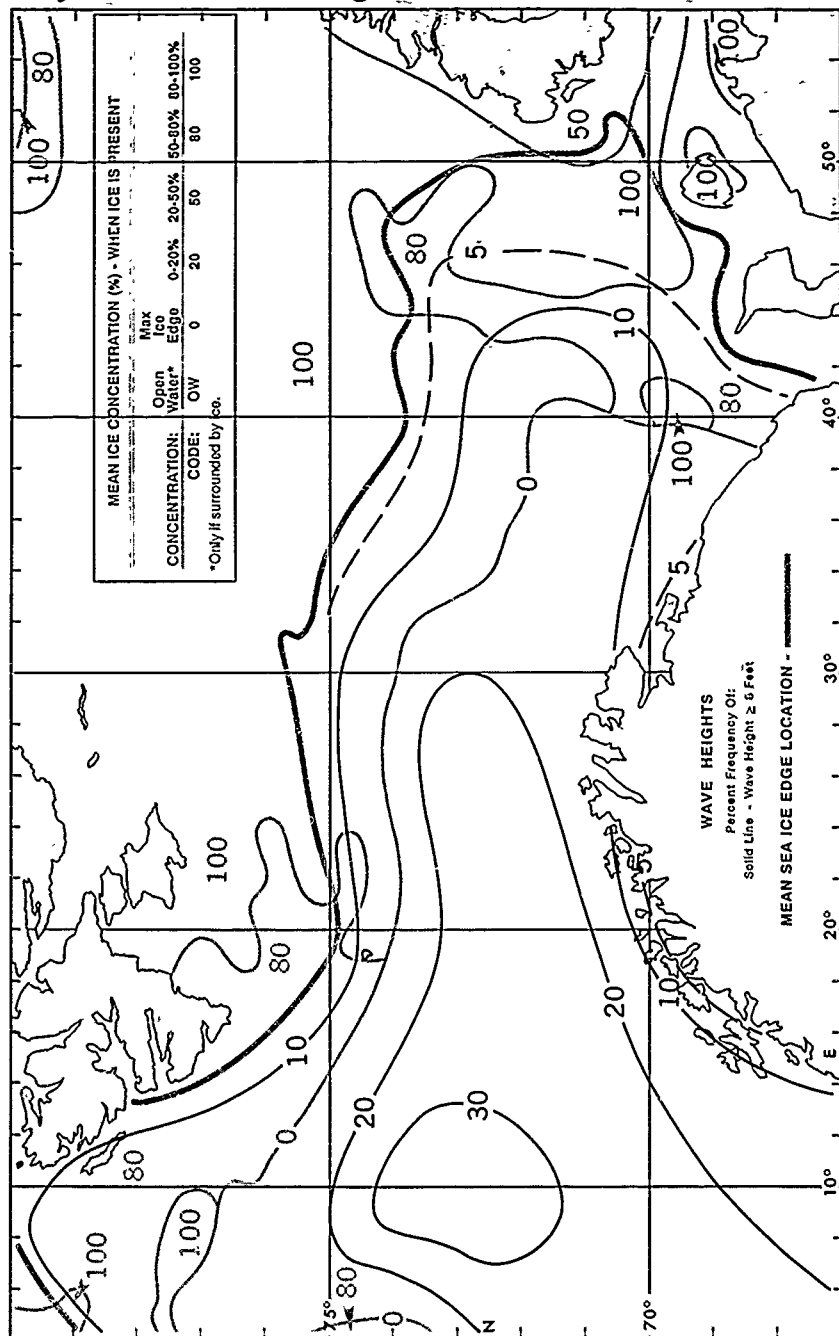
May

Wave Height ≥ 3 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

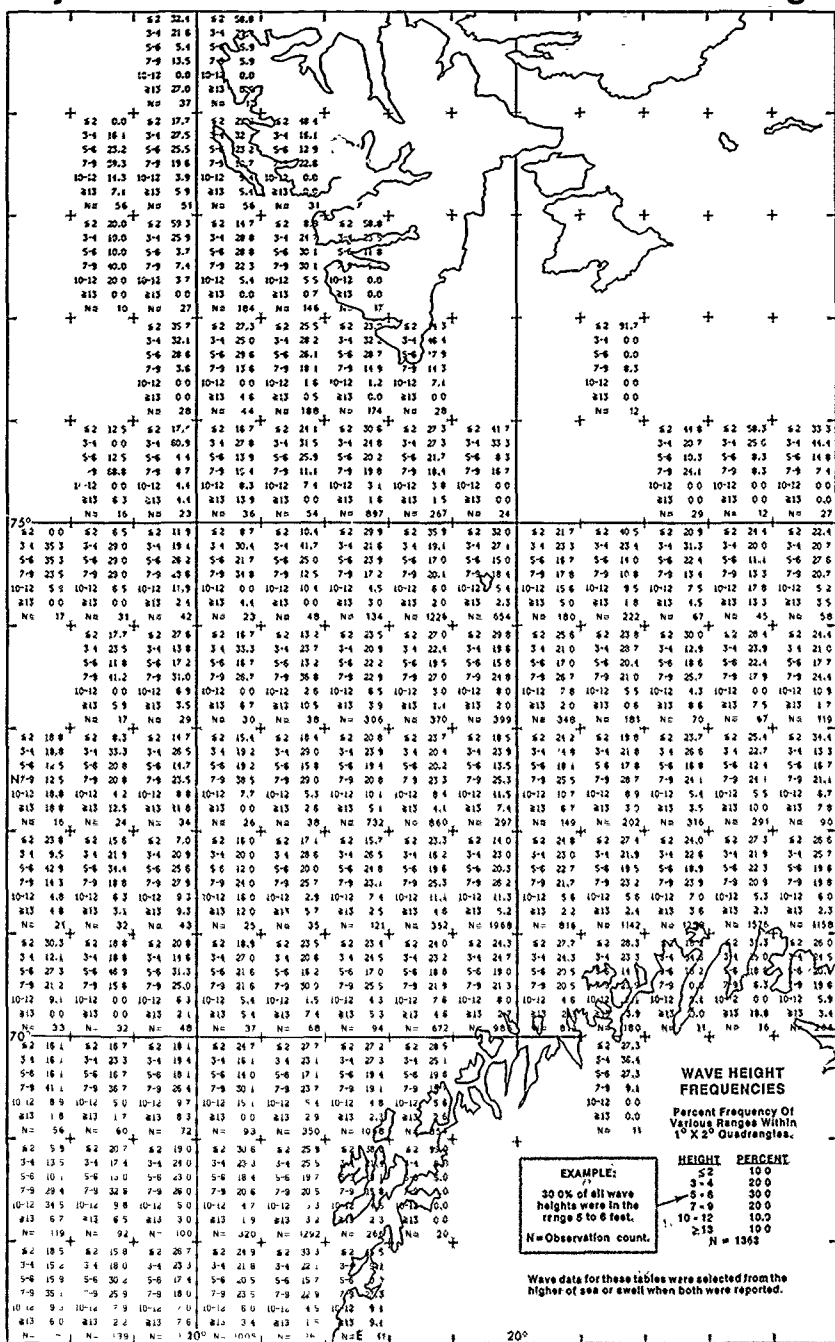
May

Wave Height ≥ 8 Ft. & Ice Concentration

NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

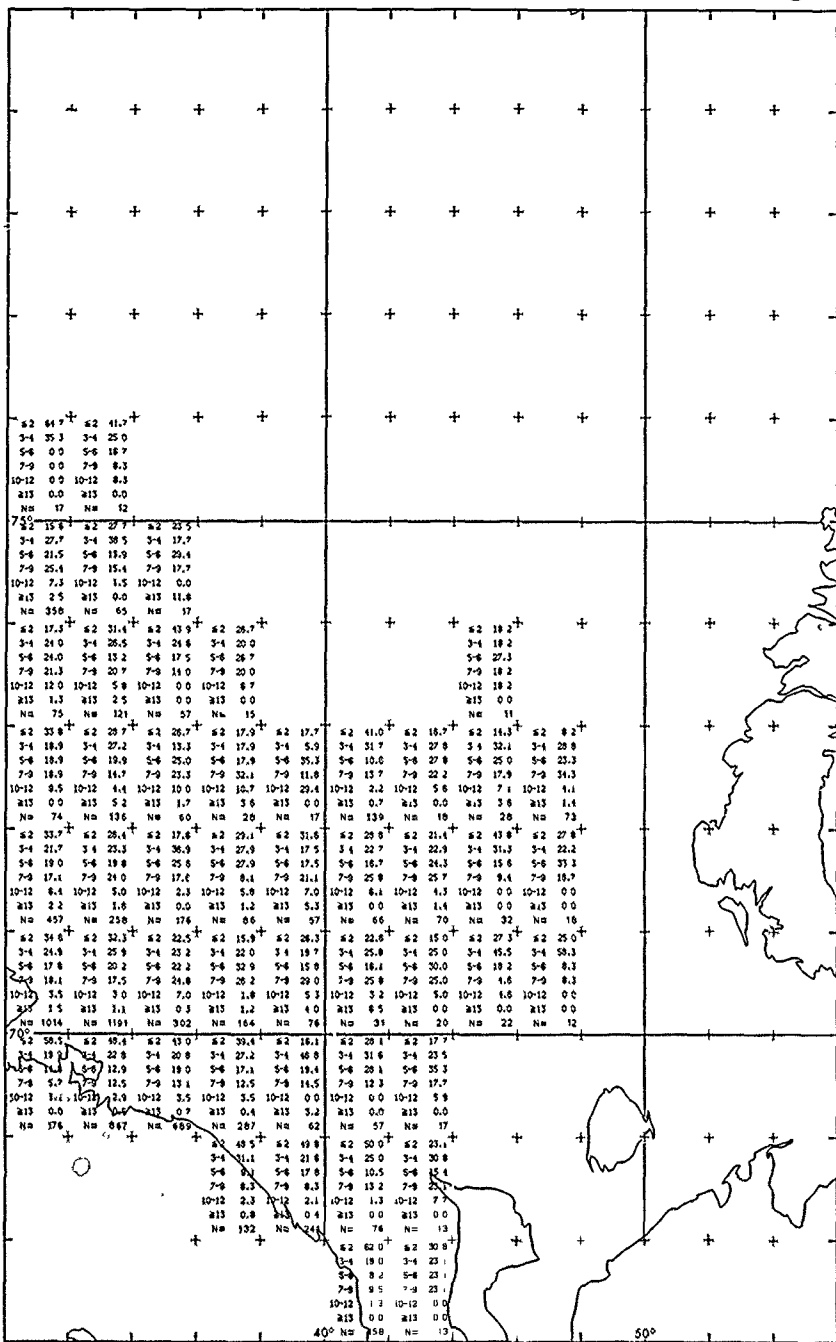
May

Wave Height



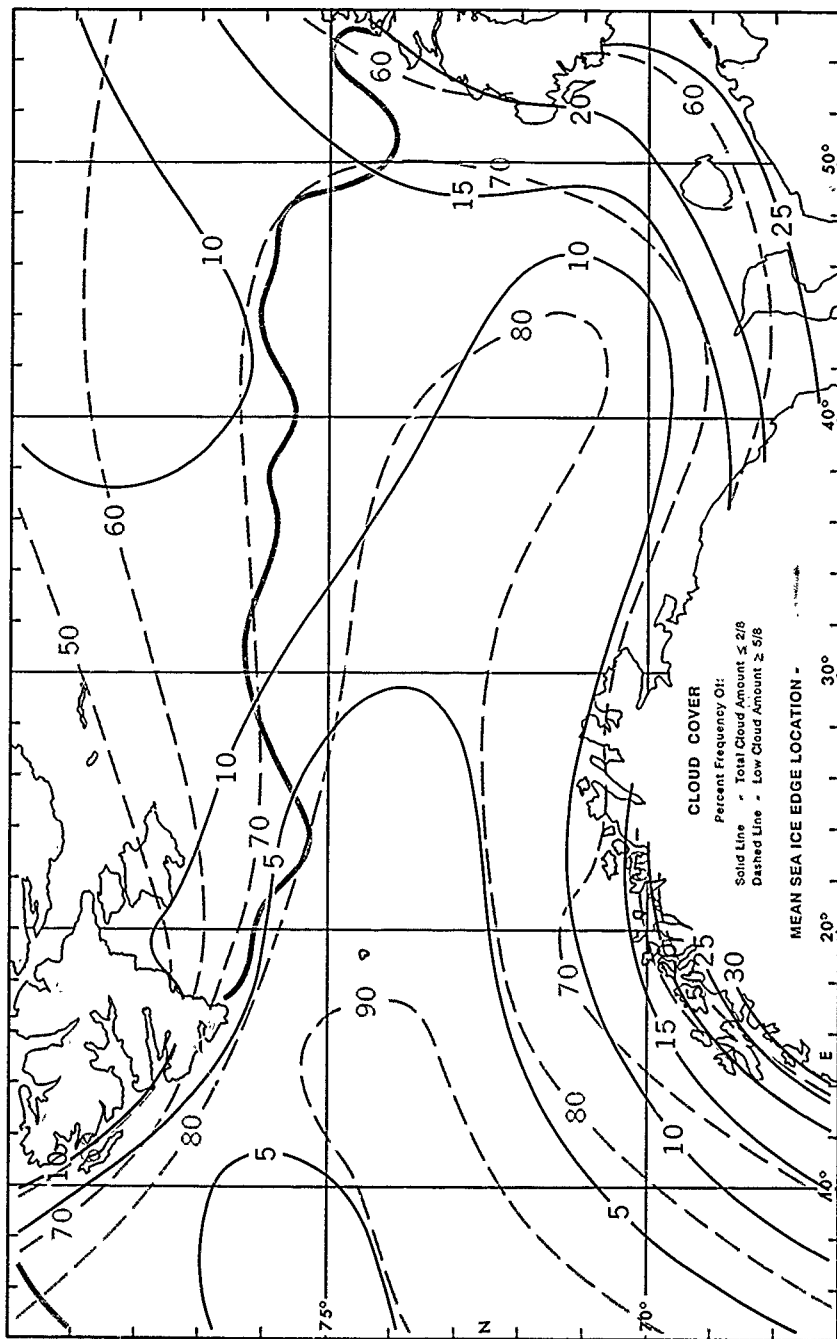
May

Wave Height



June

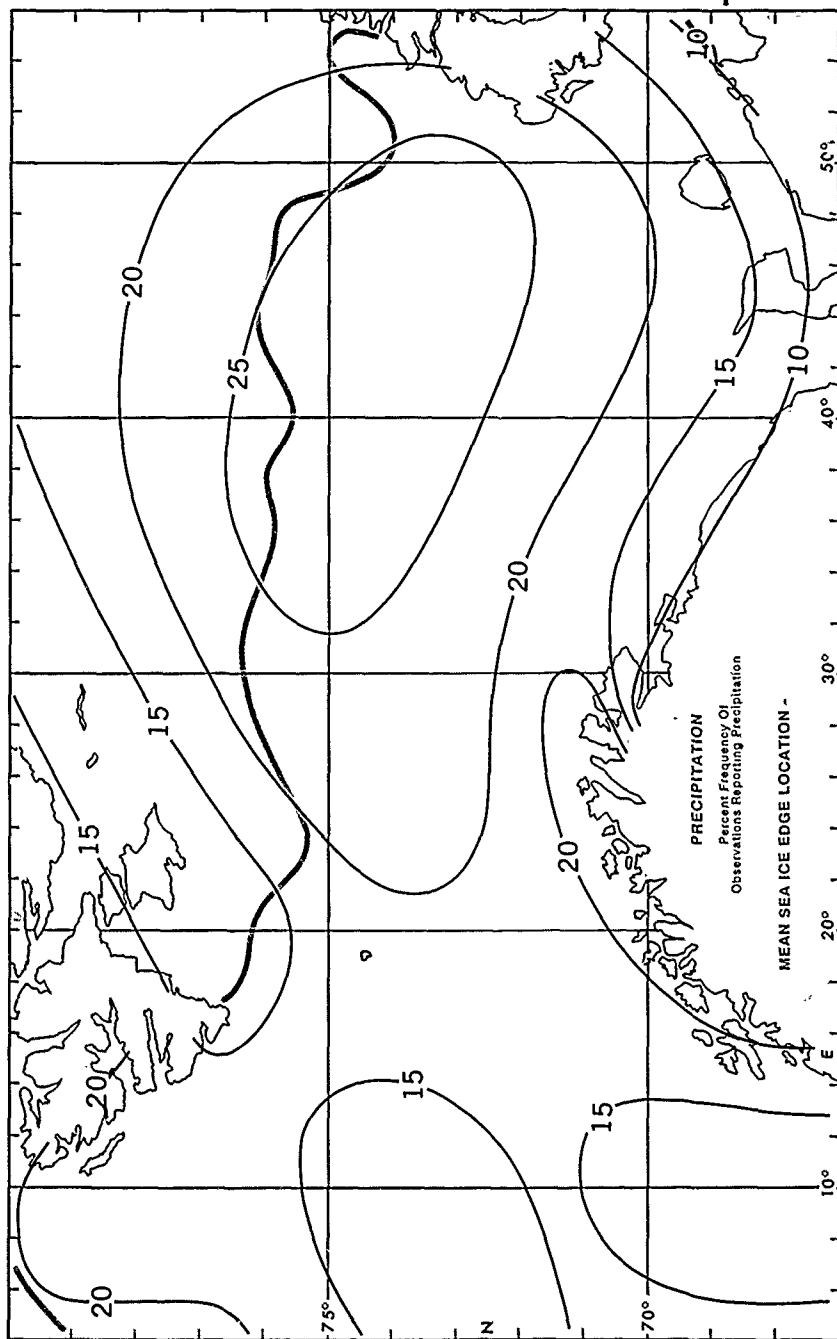
Clouds



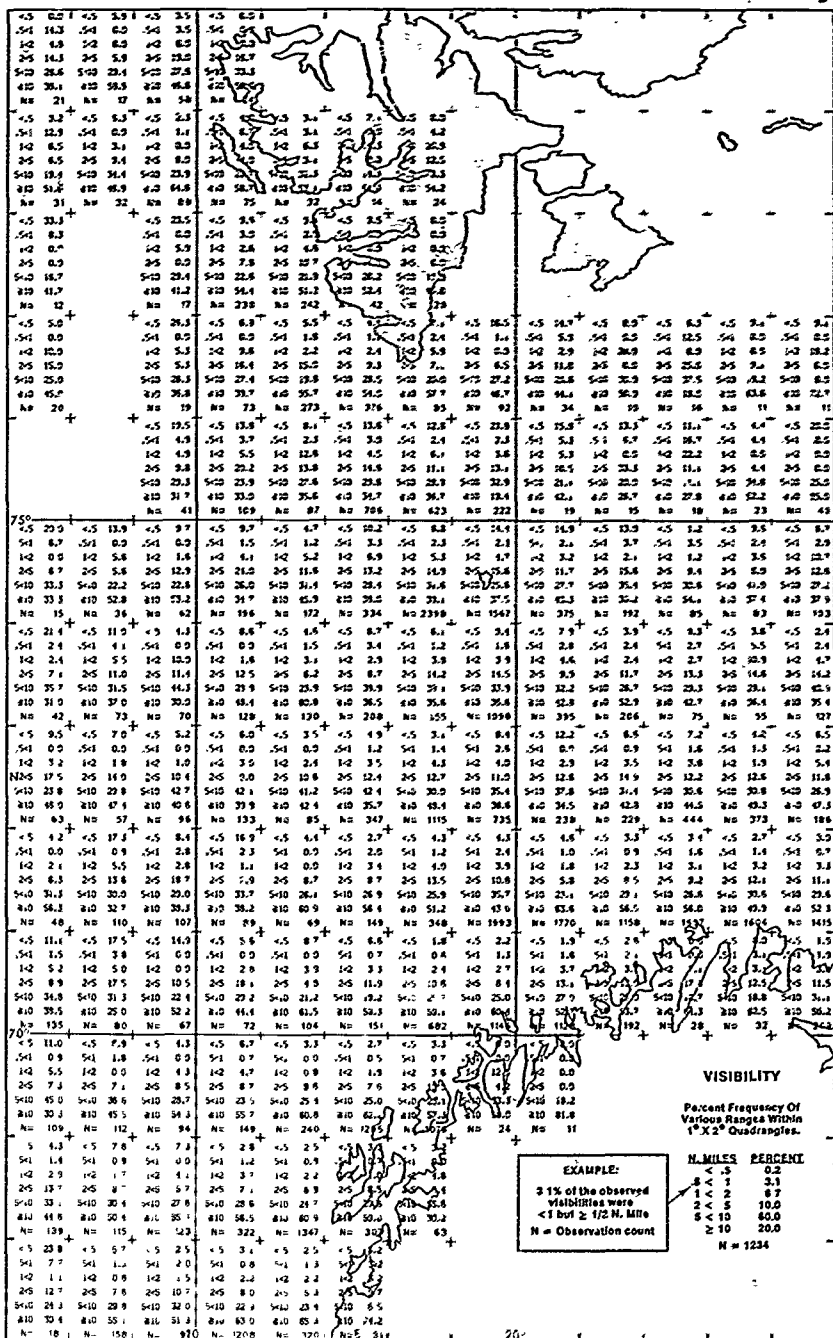
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

Precipitation

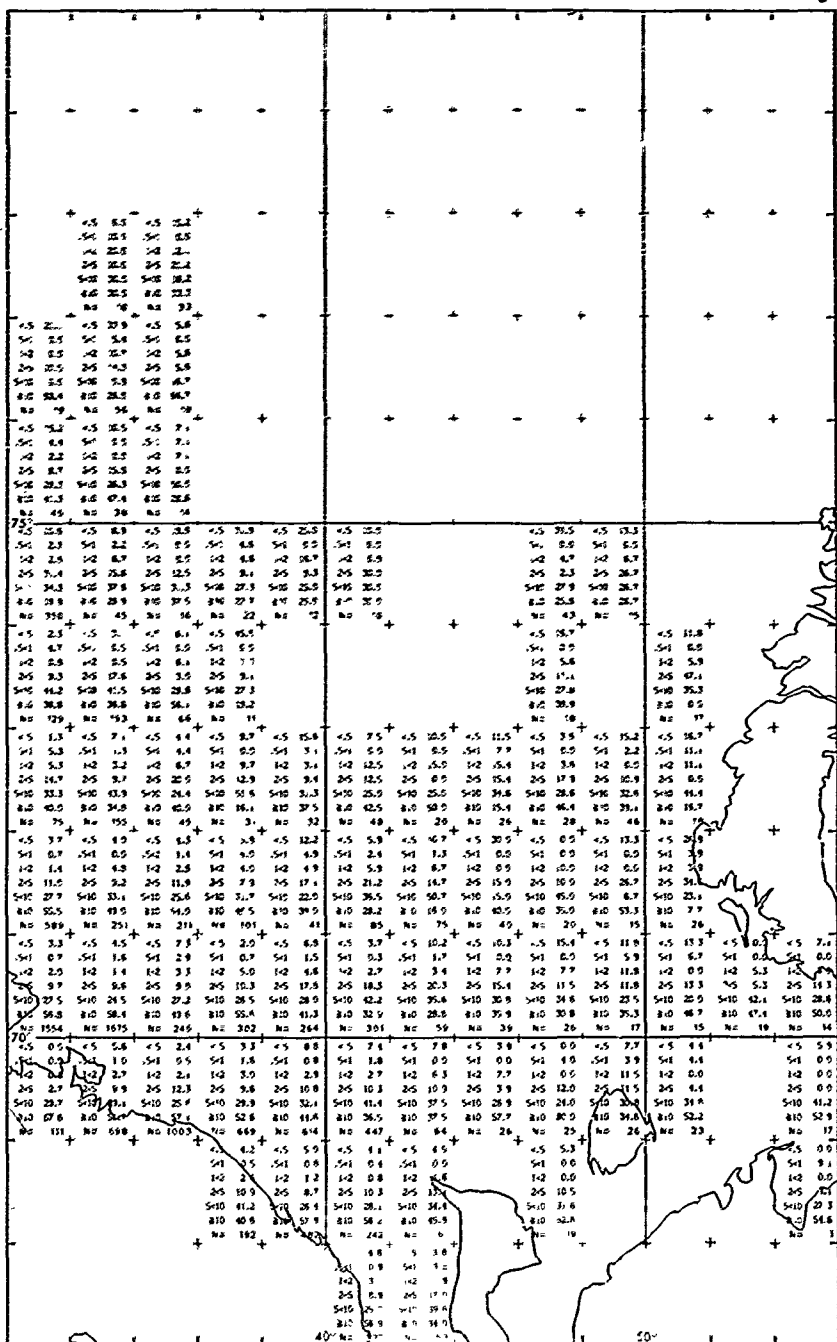


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.



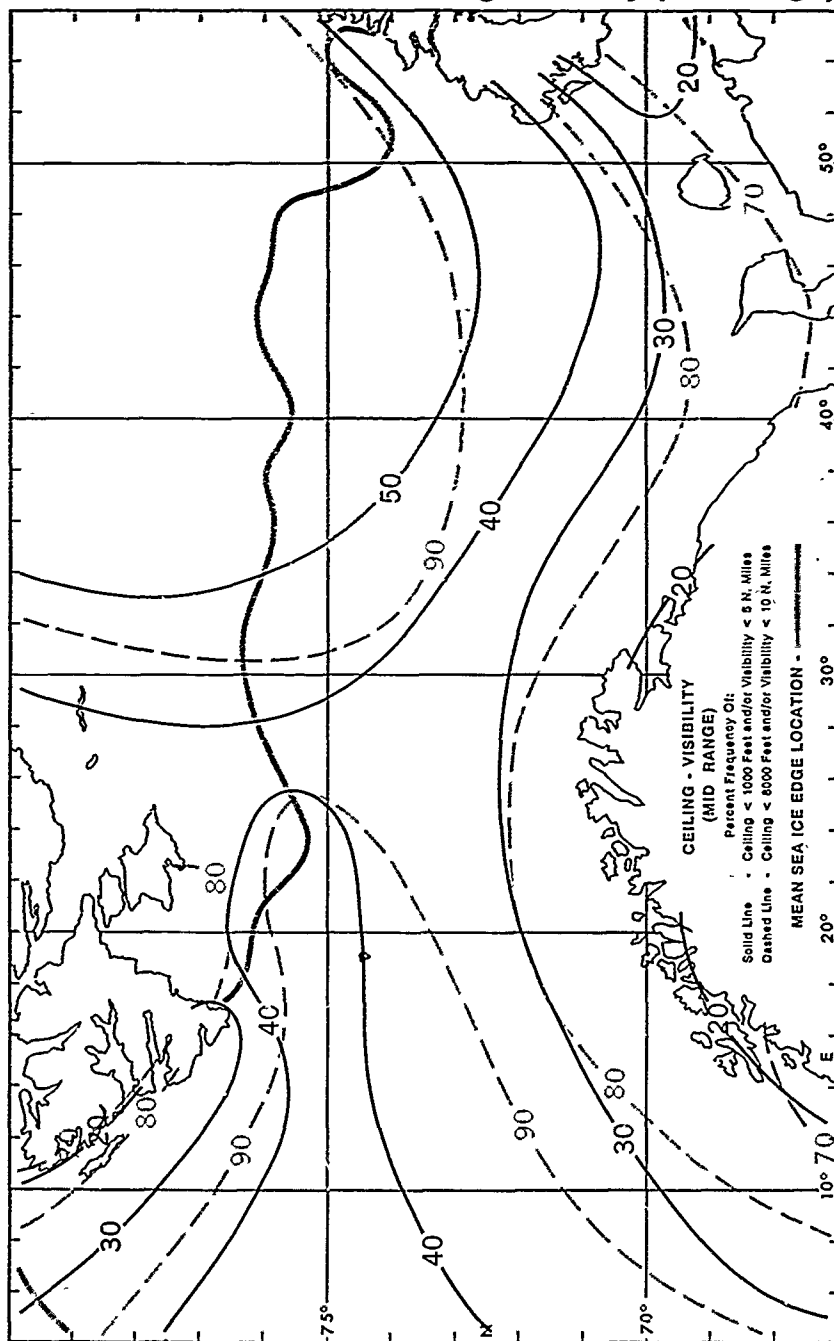
June

Visibility



June

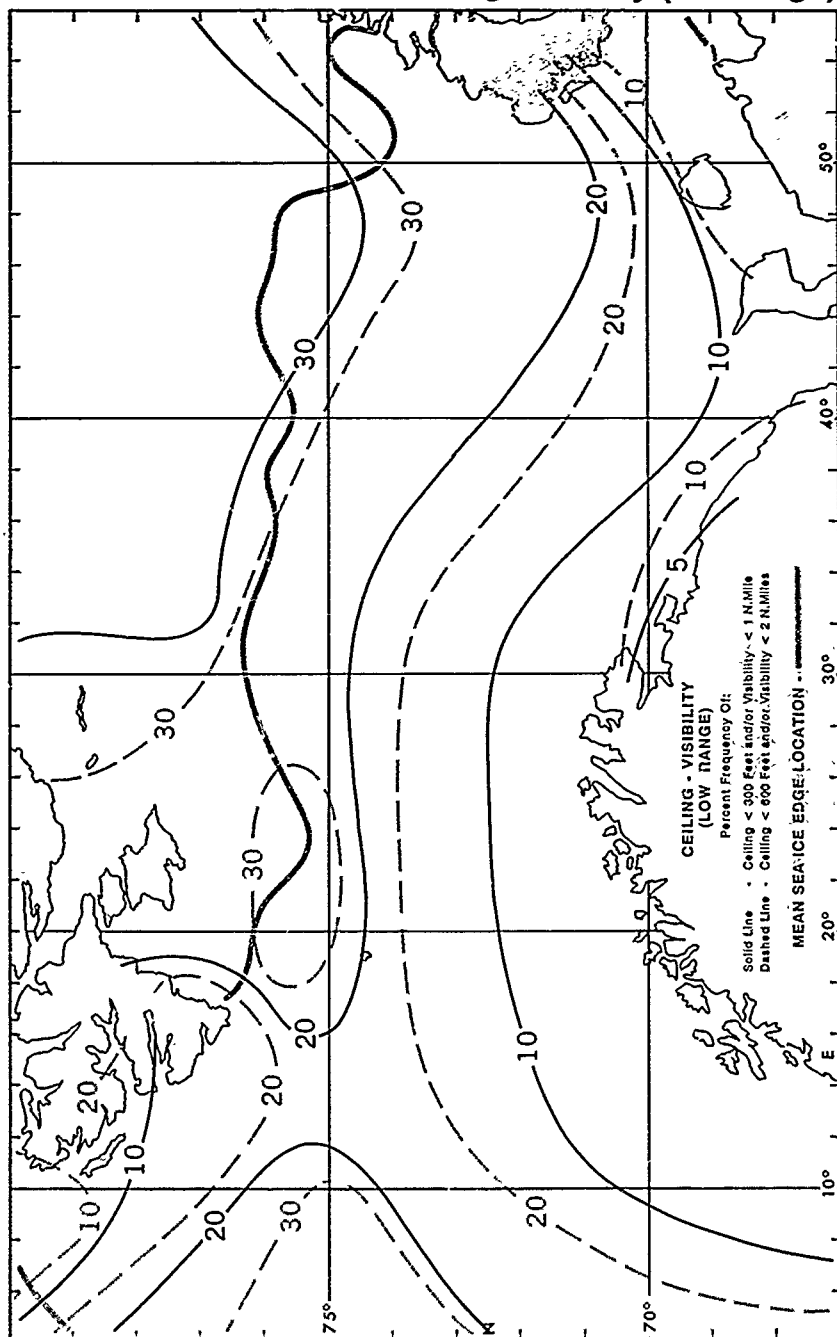
Ceiling-Visibility (mid range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

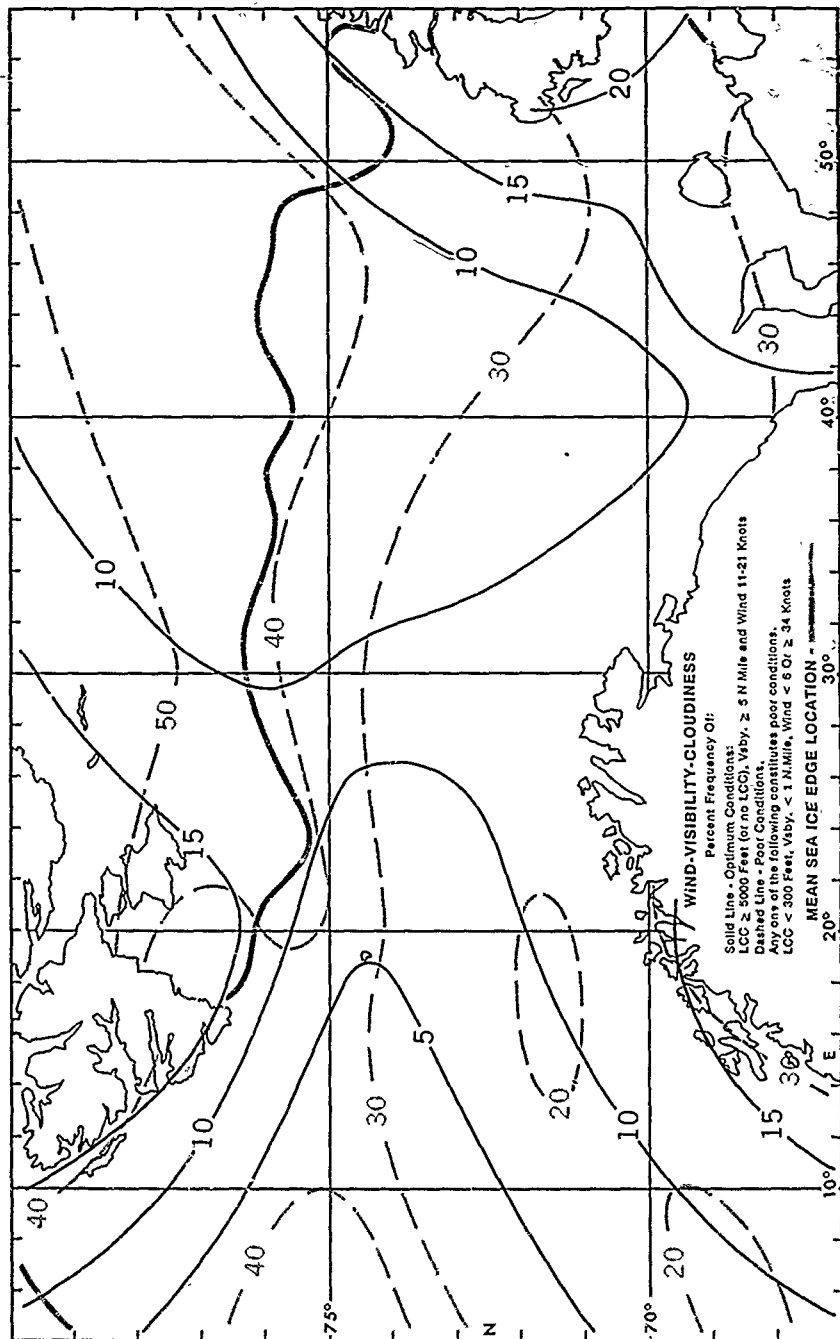
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

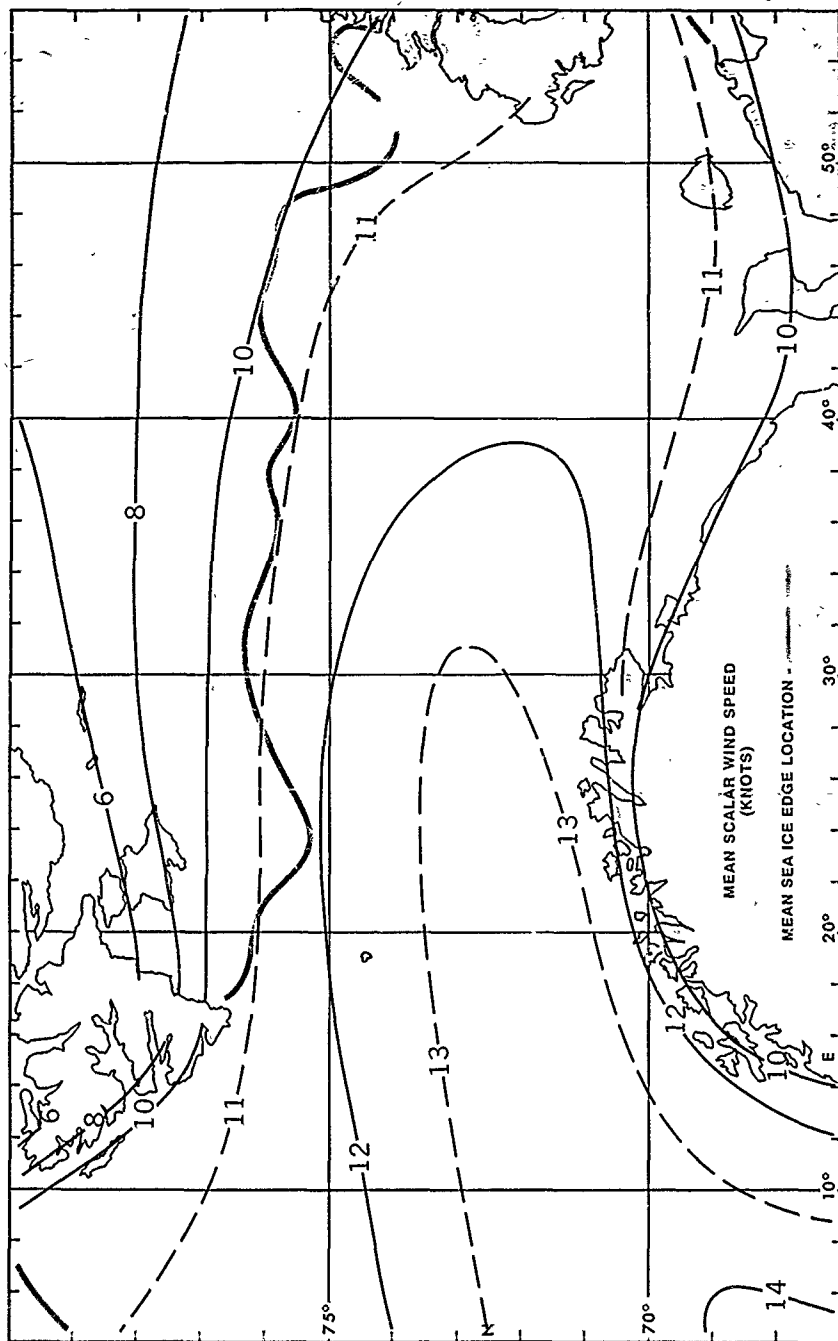
Wind-Visibility-Cloudiness



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

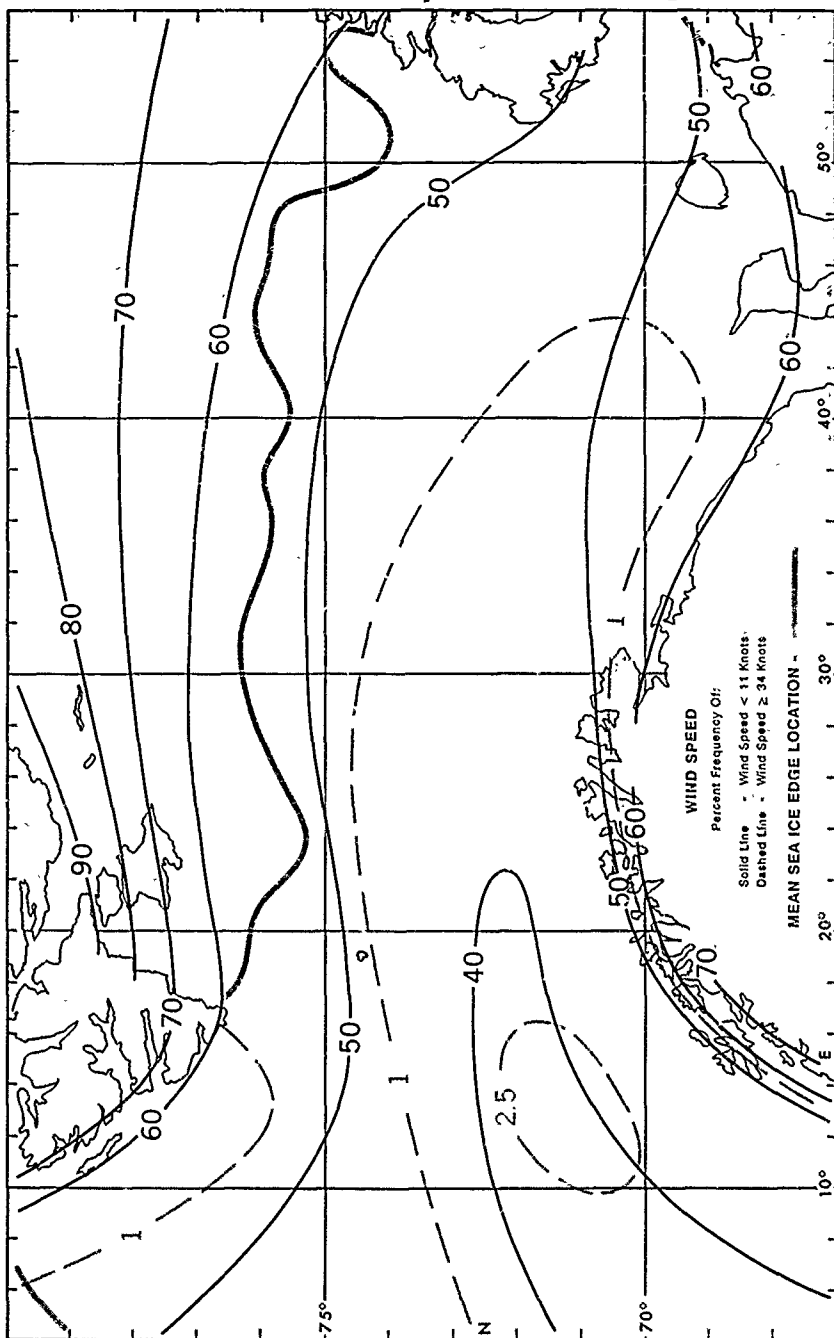
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

June

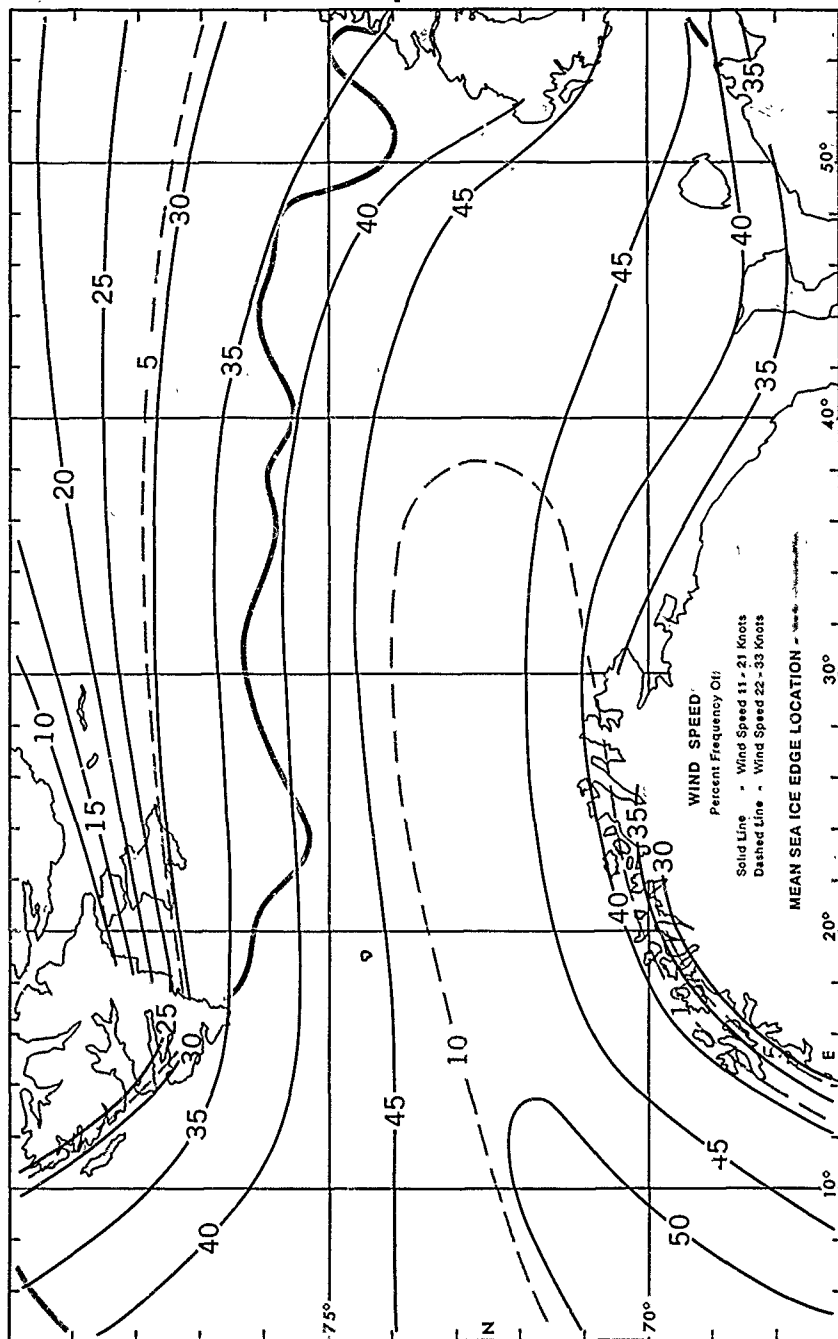
Wind Speed < 11 and ≥ 34 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

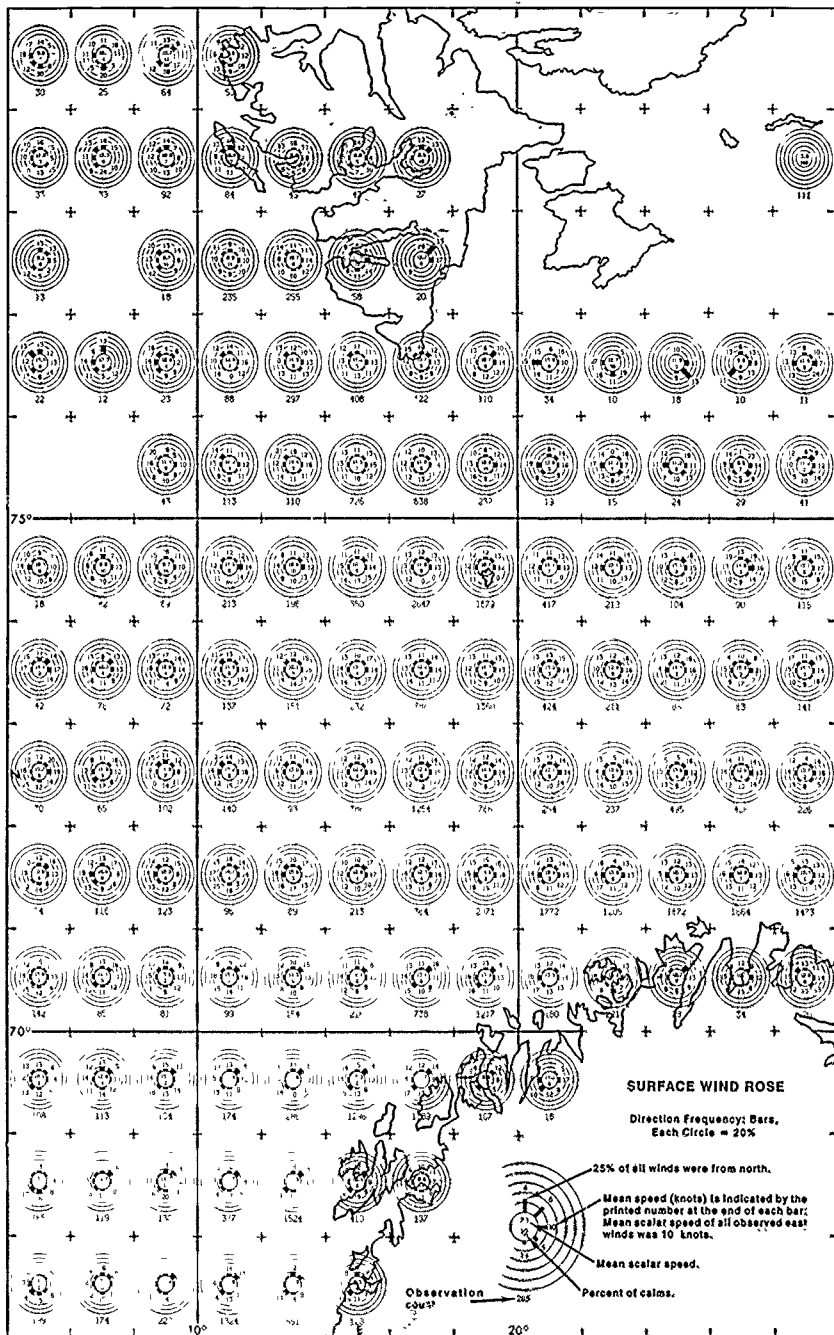
Wind Speed 11-21 and 22-33 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

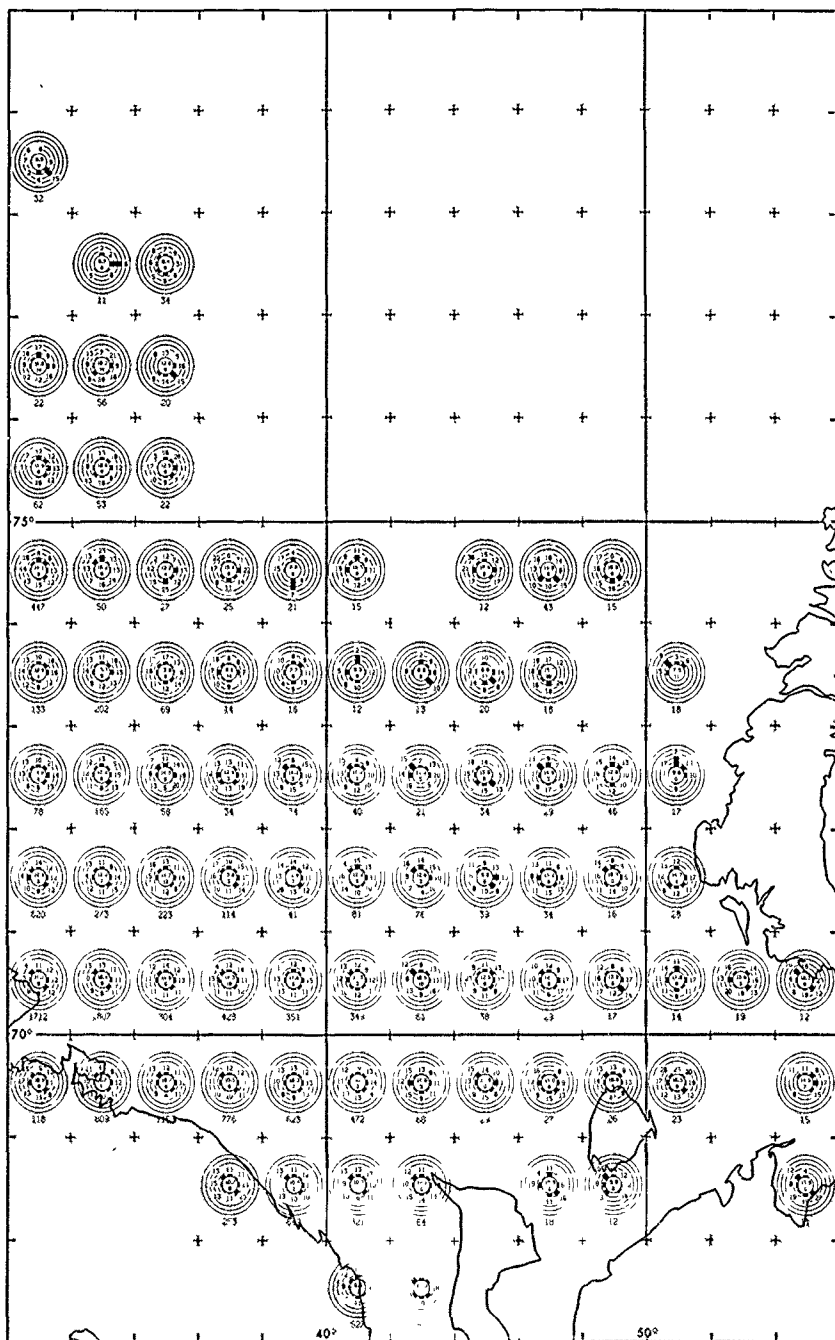
June

Surface Wind Roses



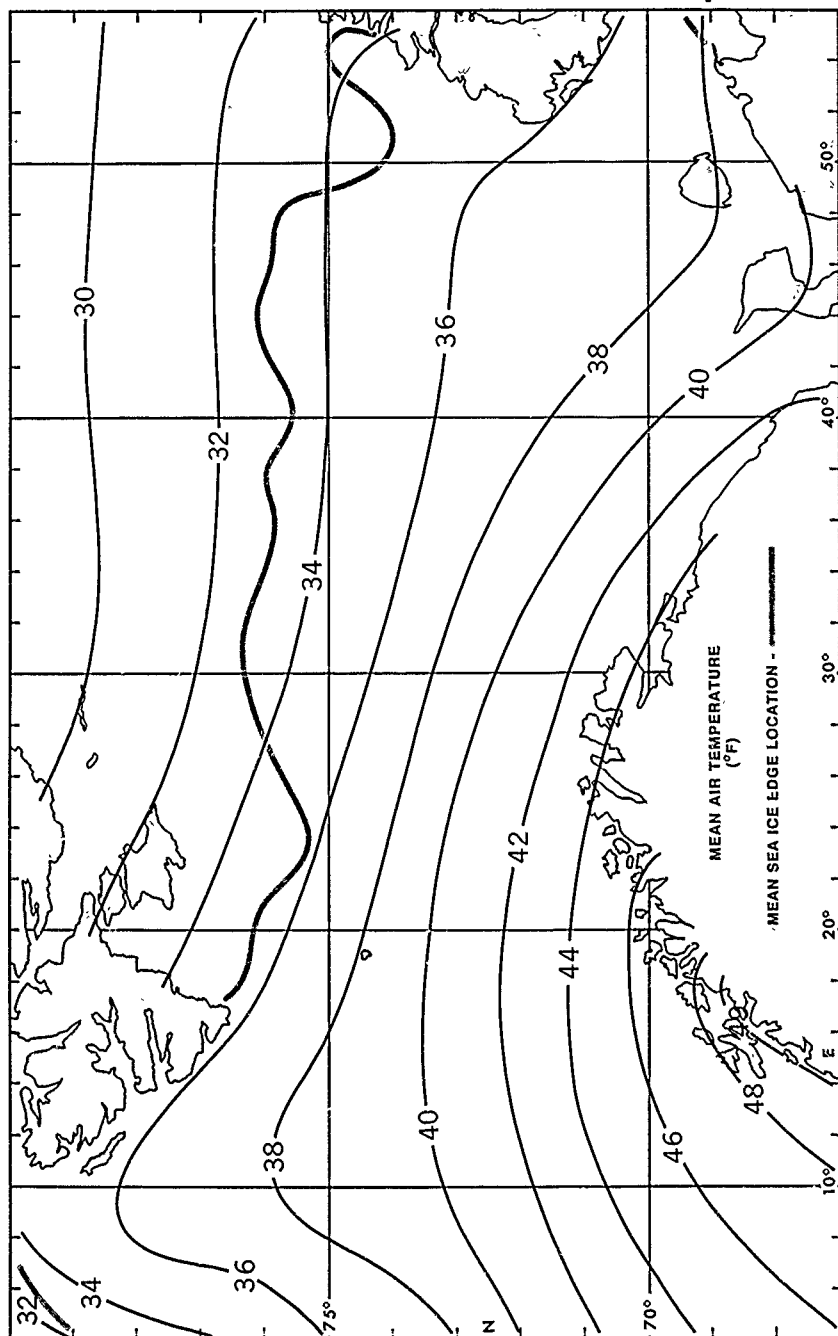
June

Surface Wind Roses



June

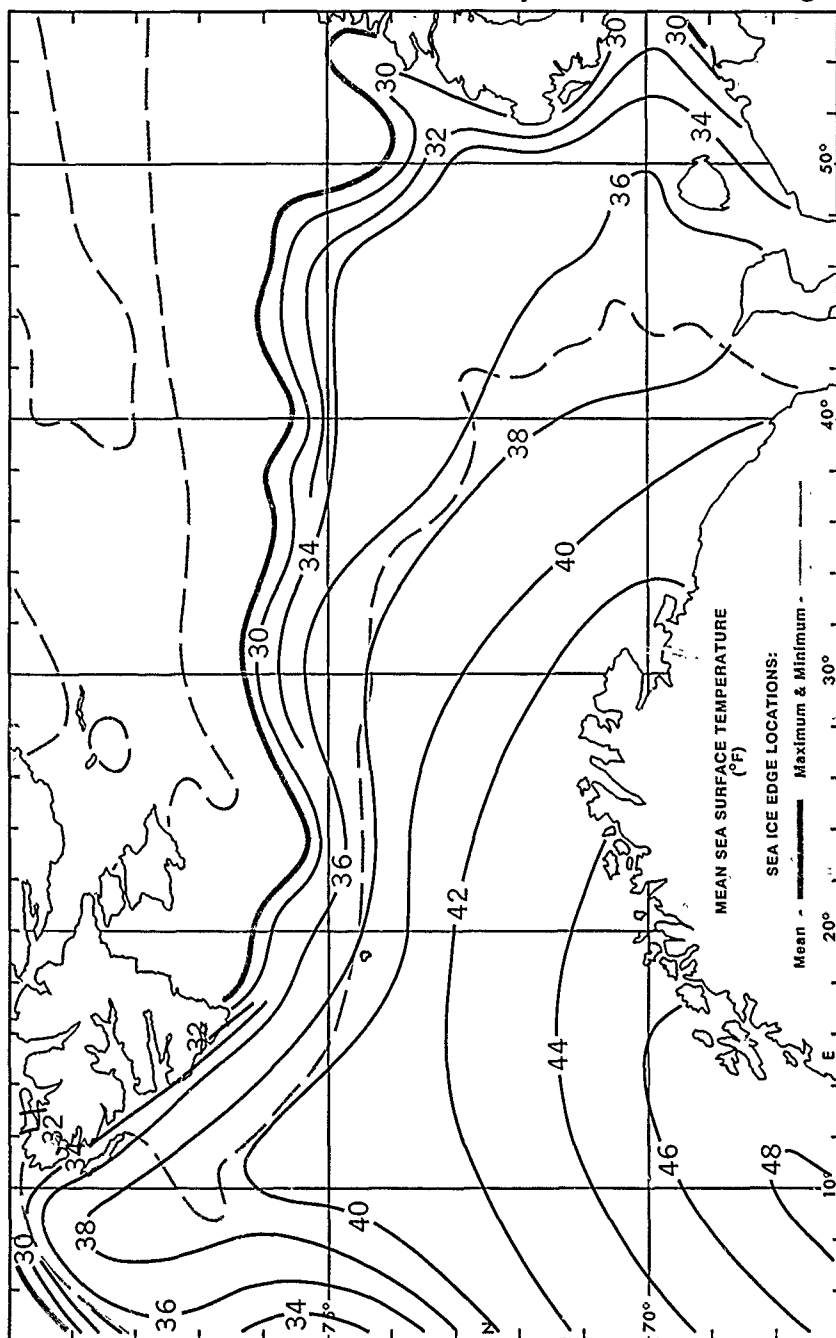
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

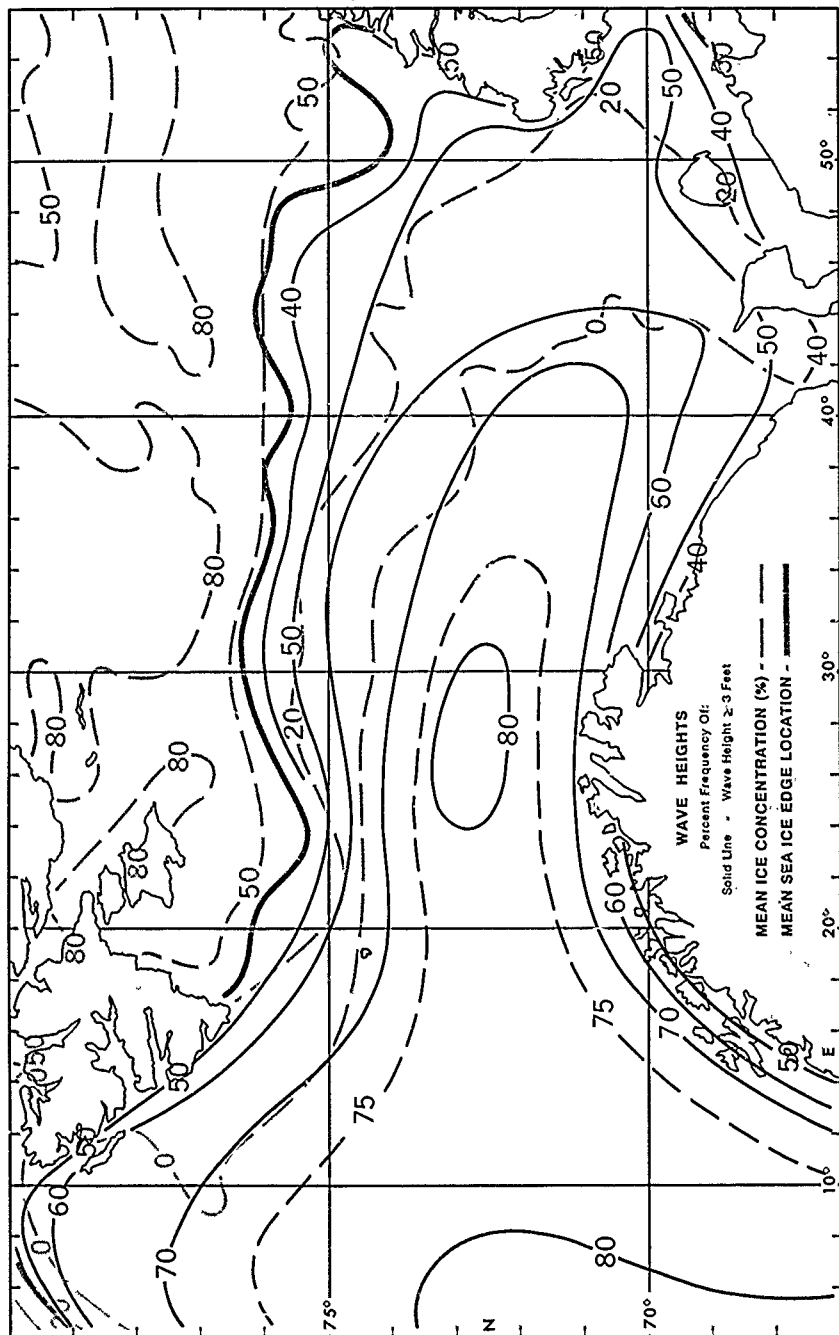
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

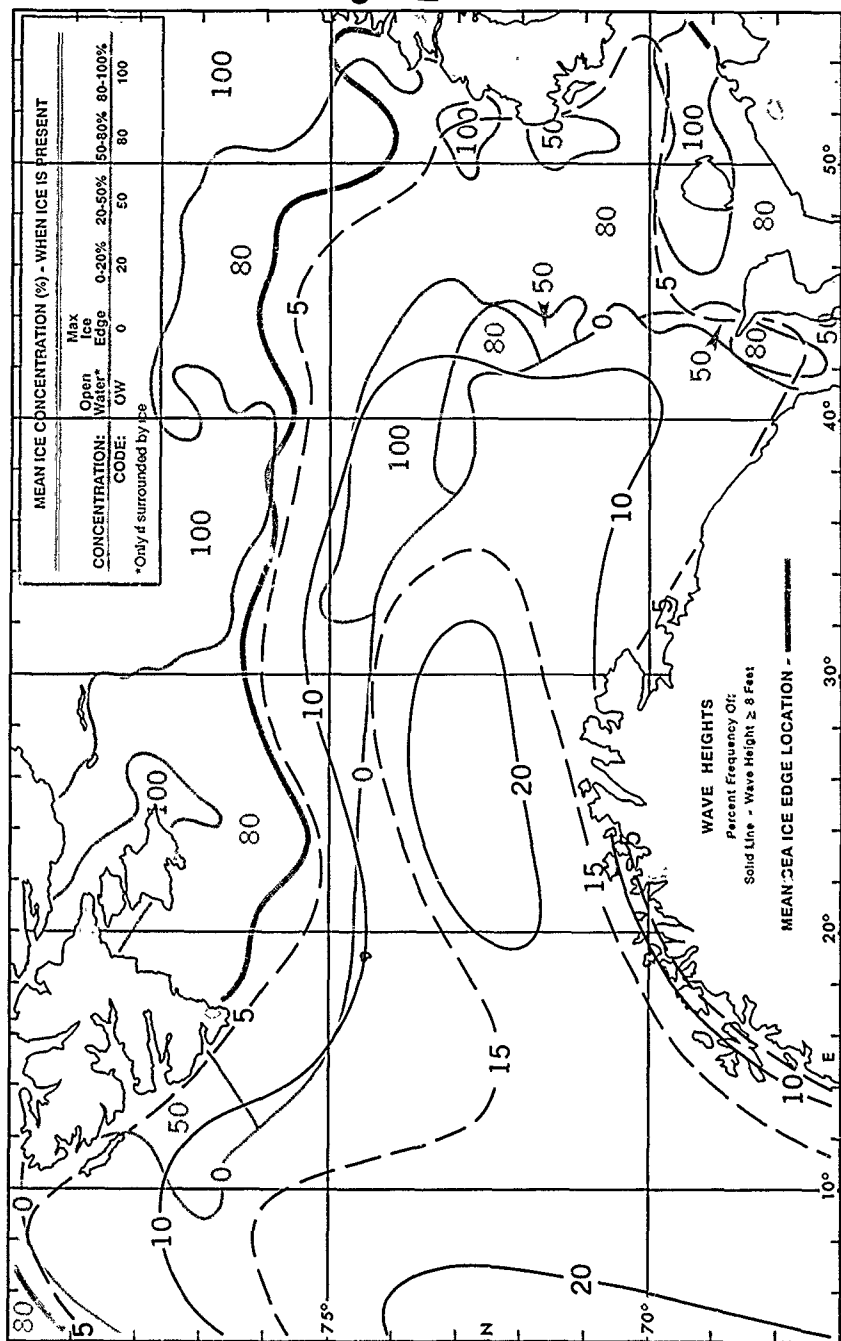
June

Wave Height ≥ 3 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

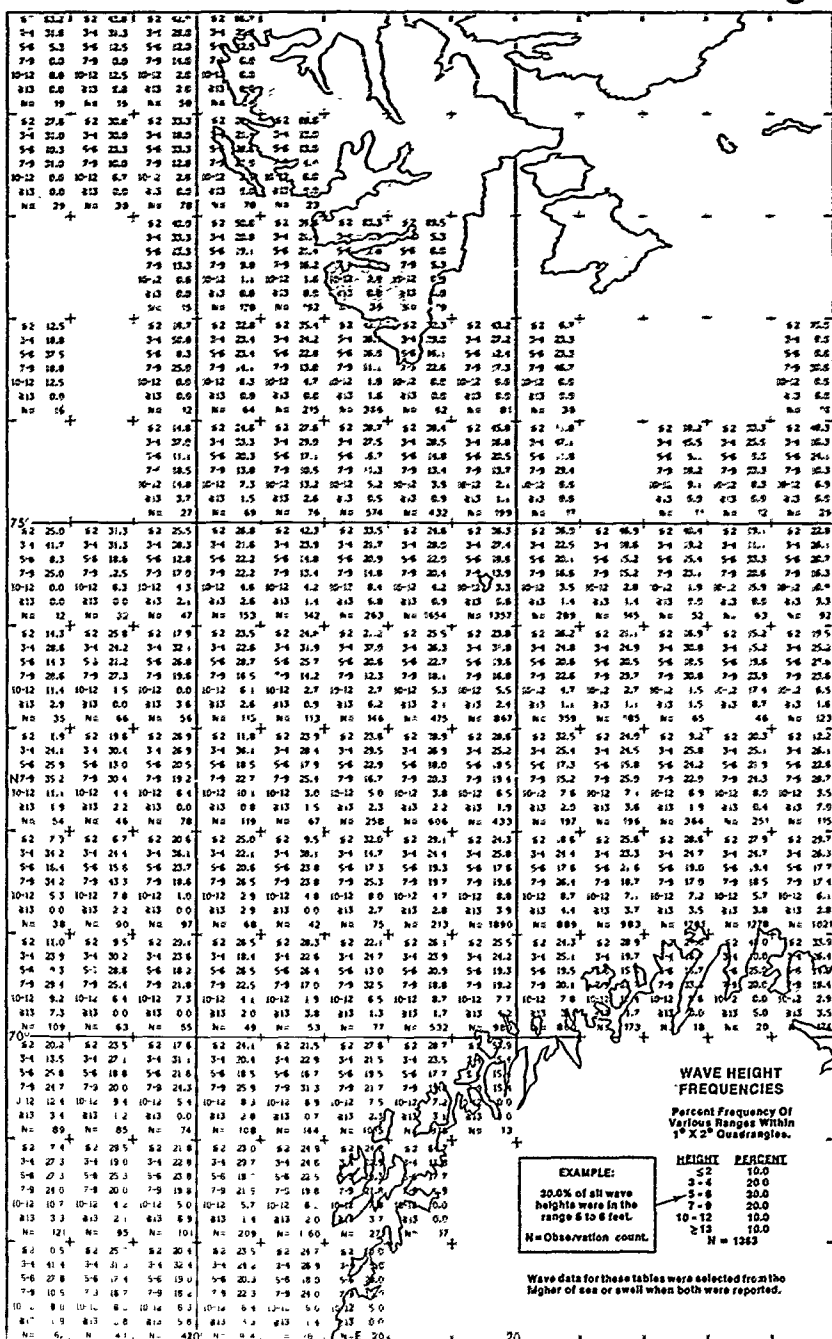
June

Wave Height ≥ 8 Ft. & Ice Concentration

NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts

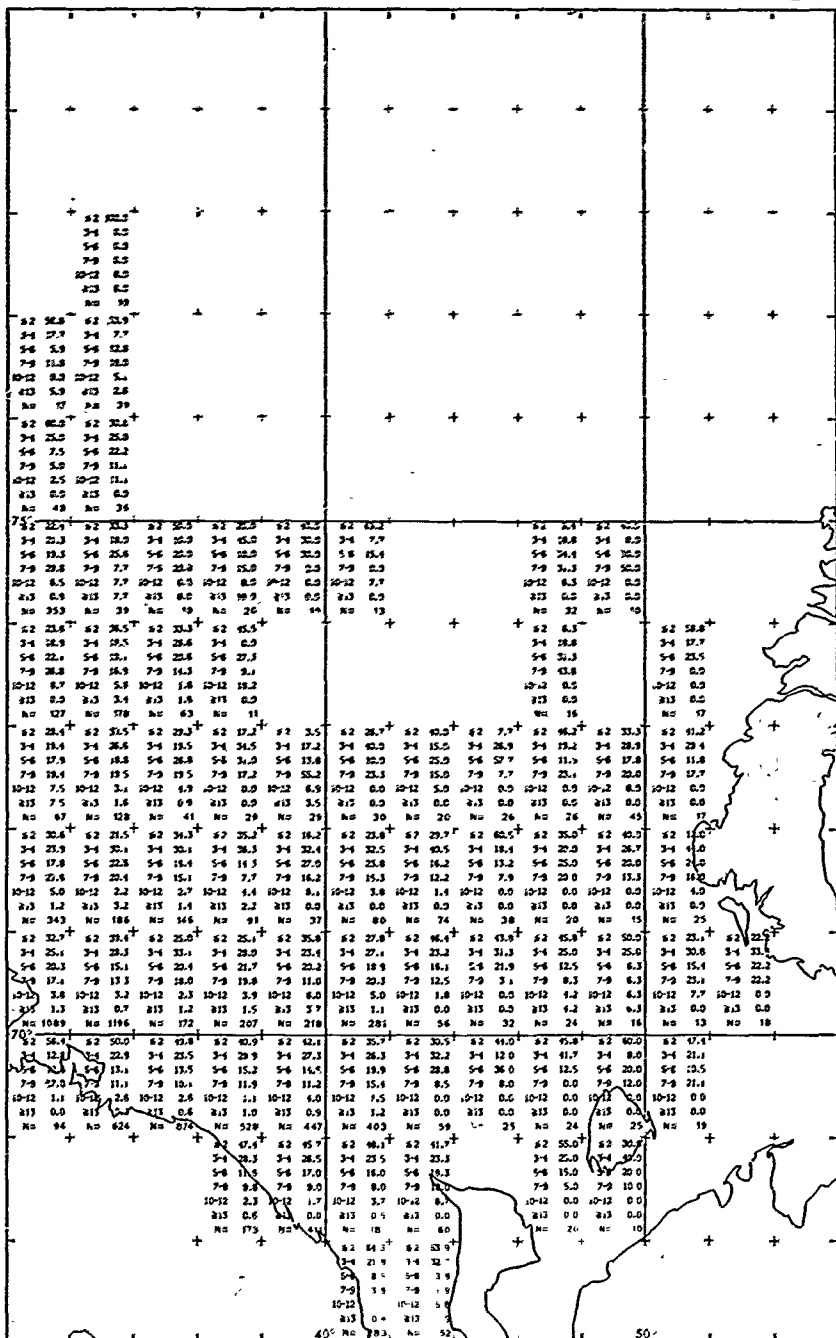
June

Wave Height



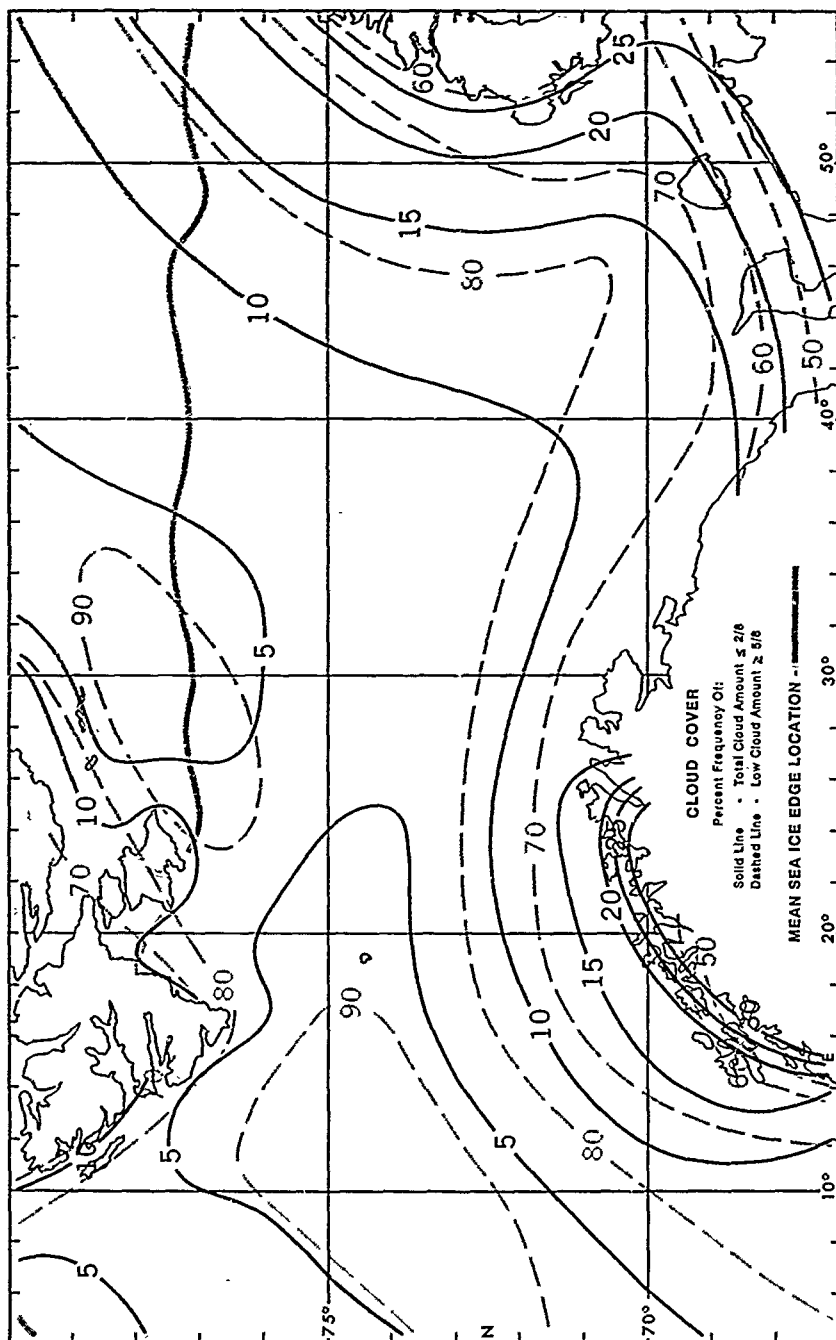
June

Wave Height



July

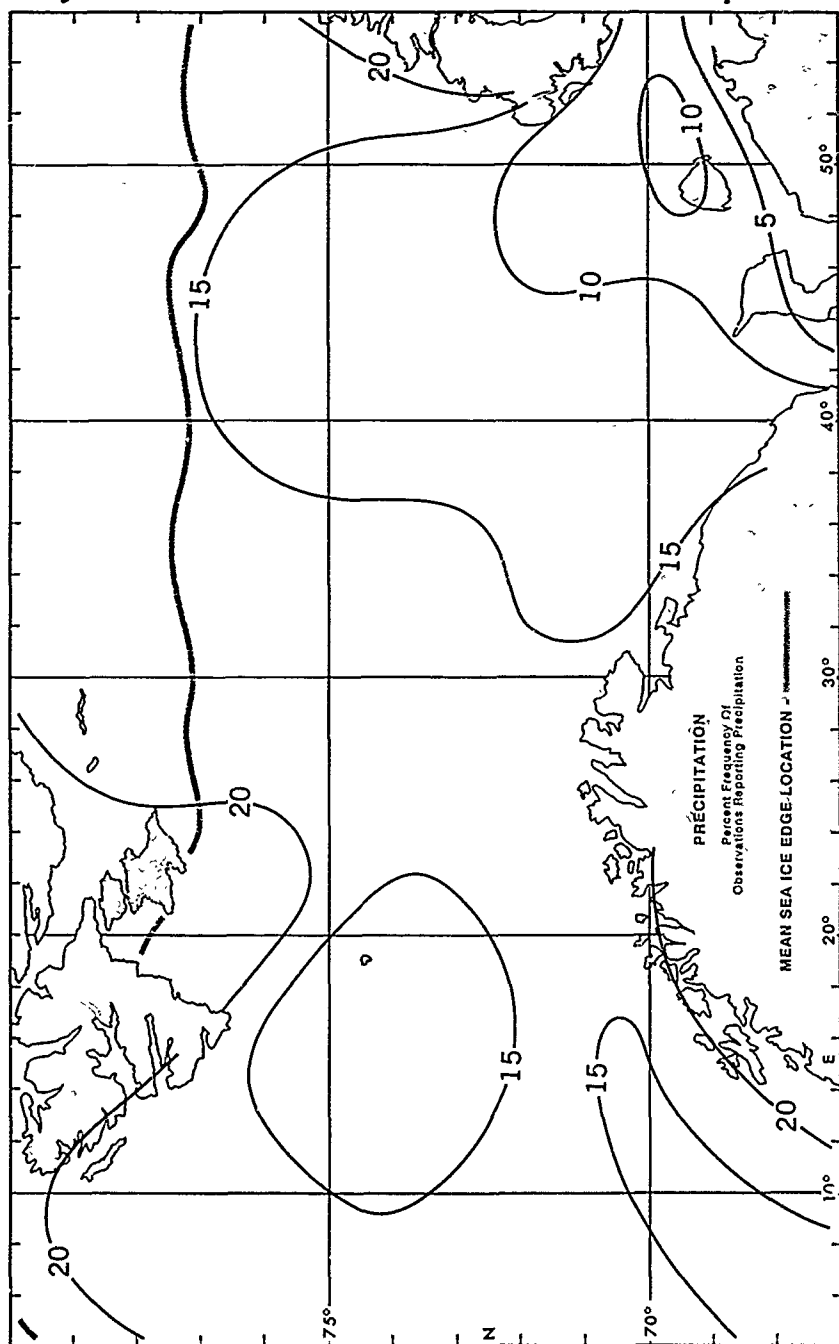
Clouds



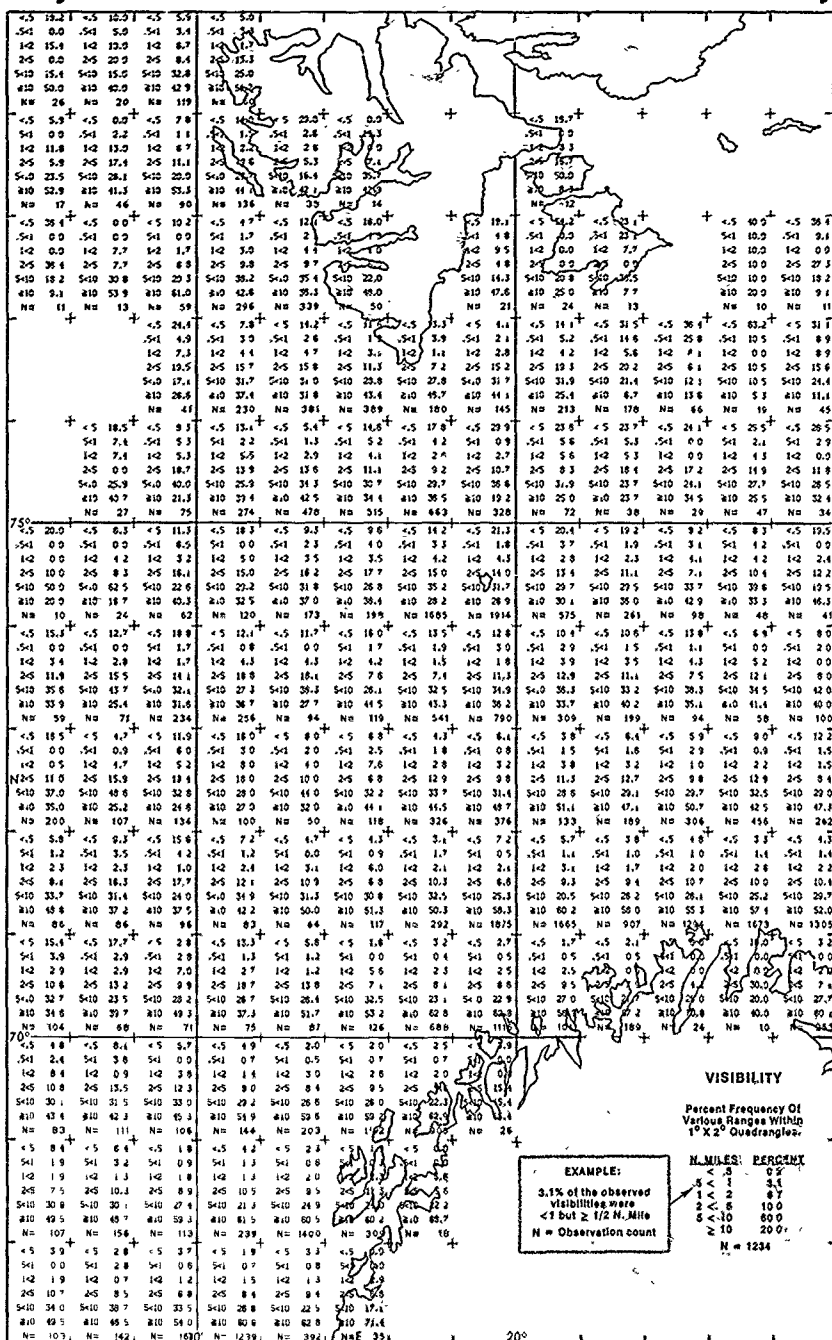
NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

Precipitation

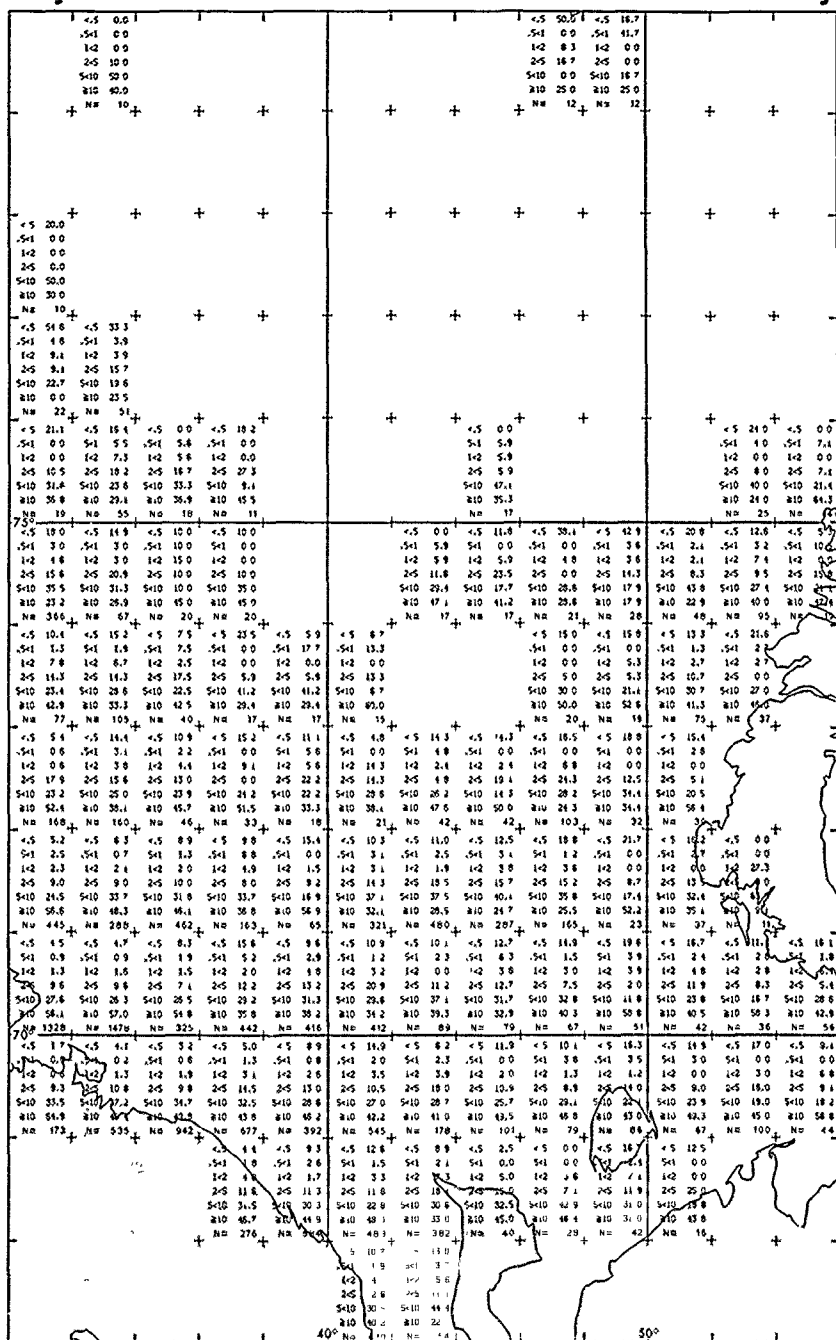


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.



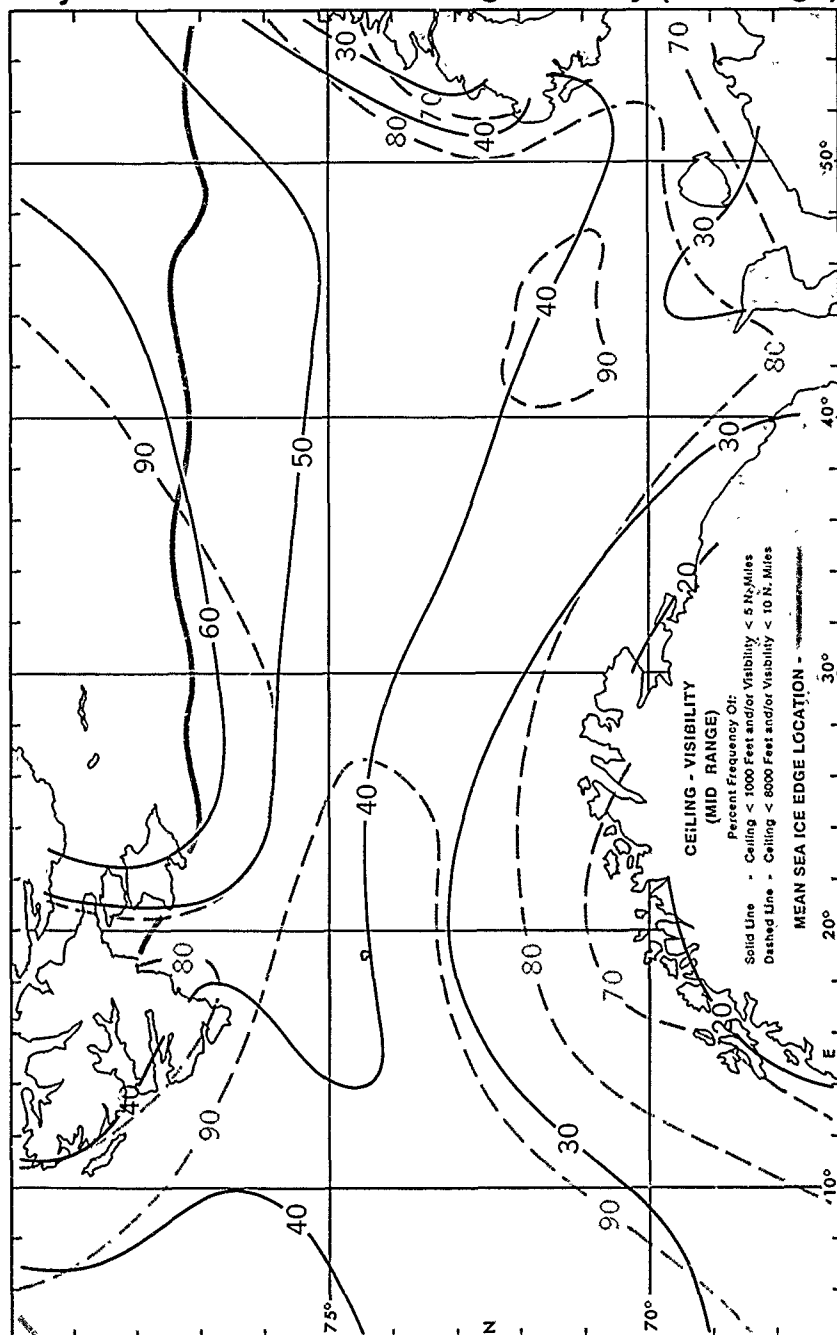
July

Visibility



July

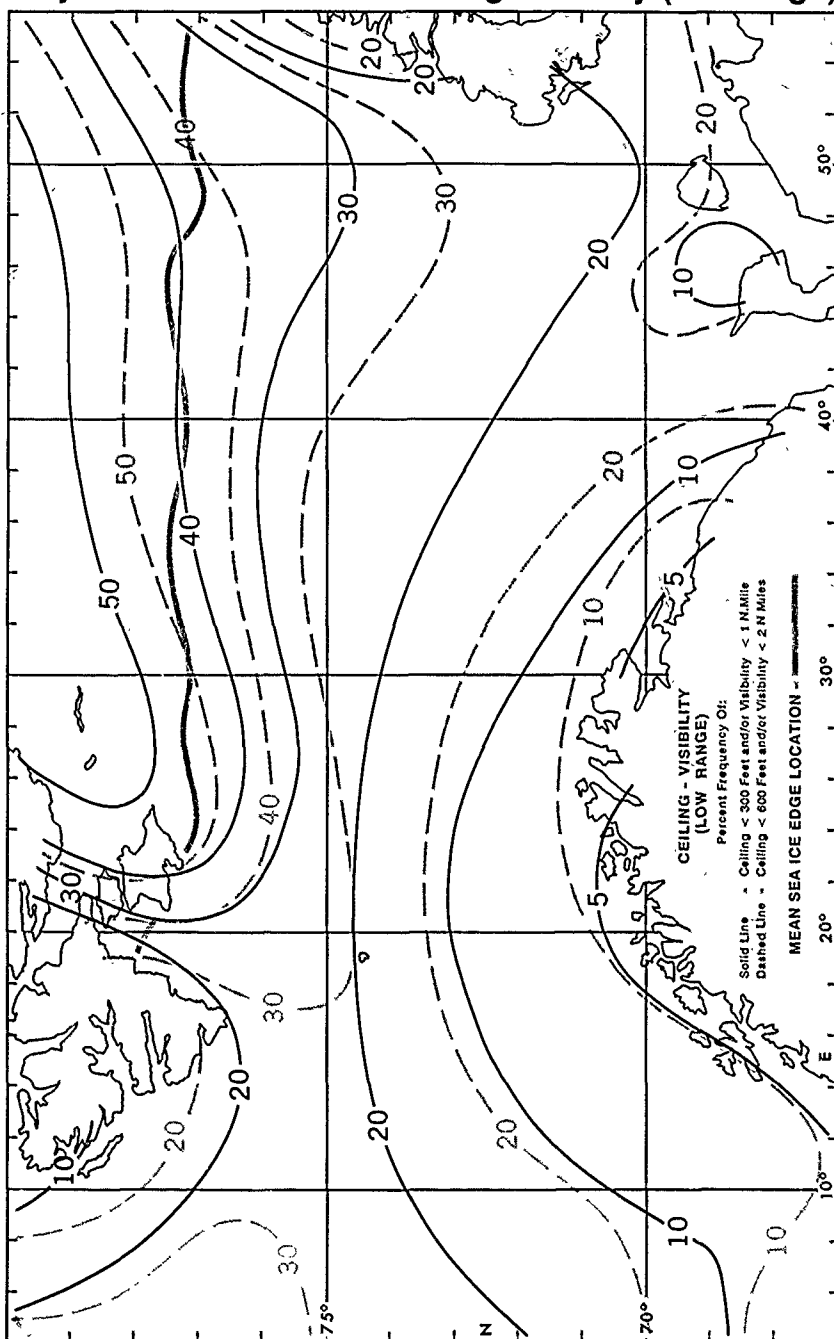
Ceiling-Visibility (mid range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

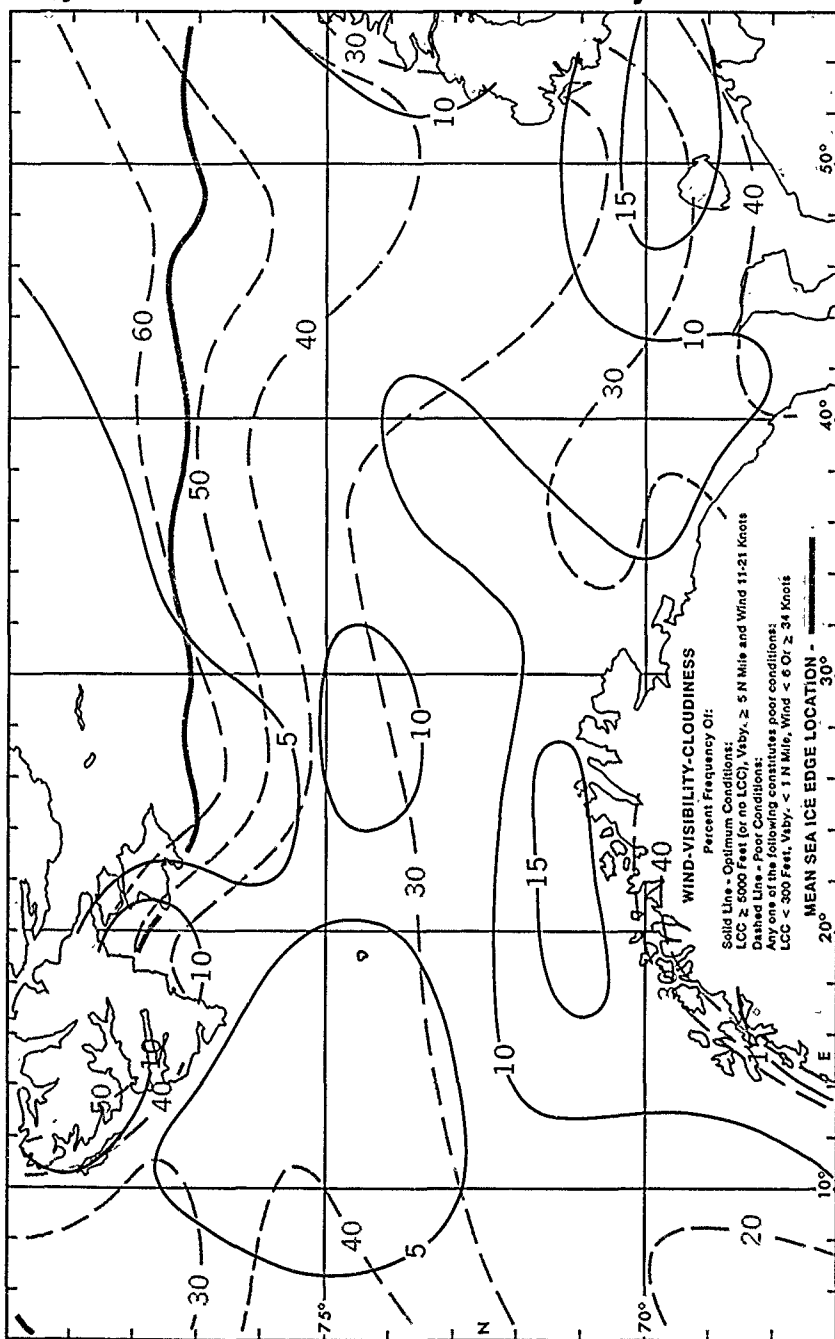
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

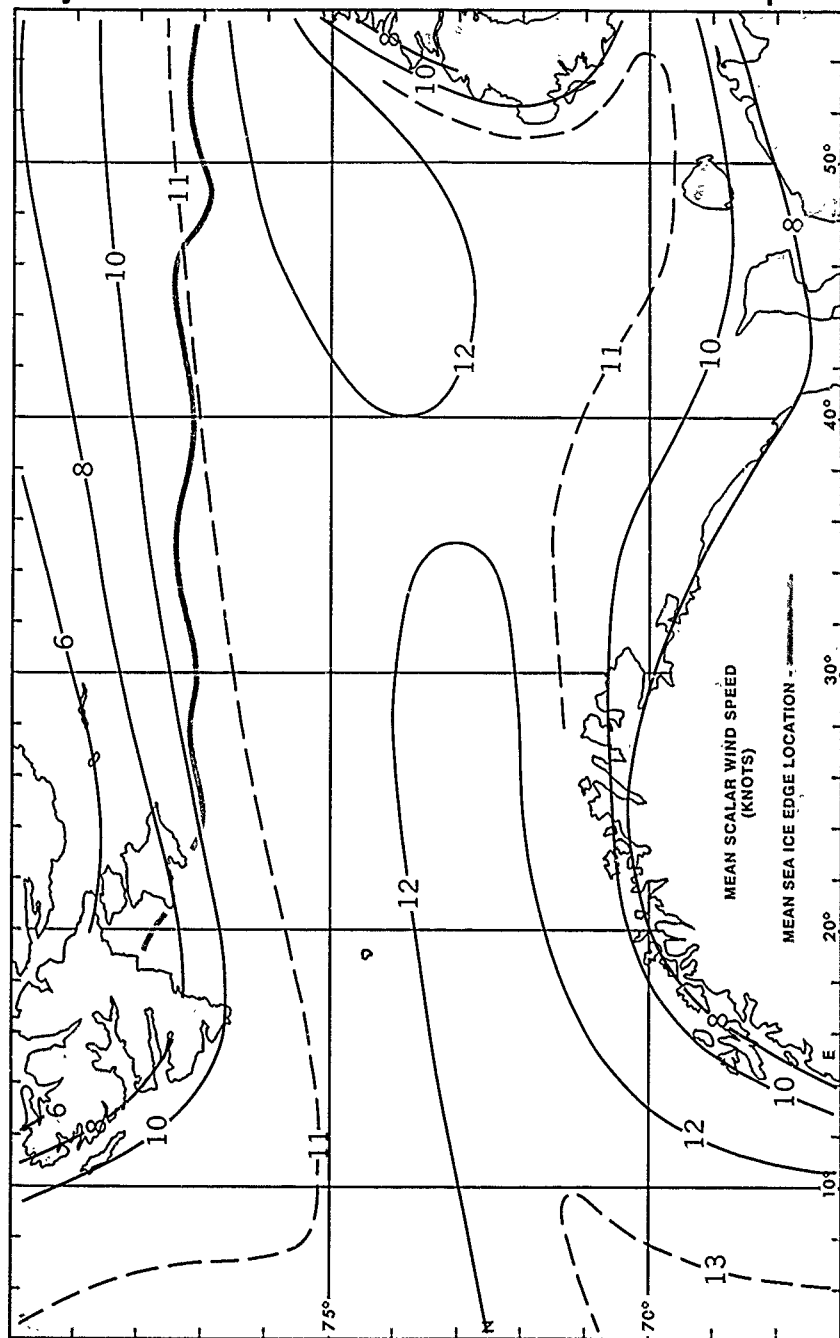
July

Wind-Visibility-Cloudiness



July

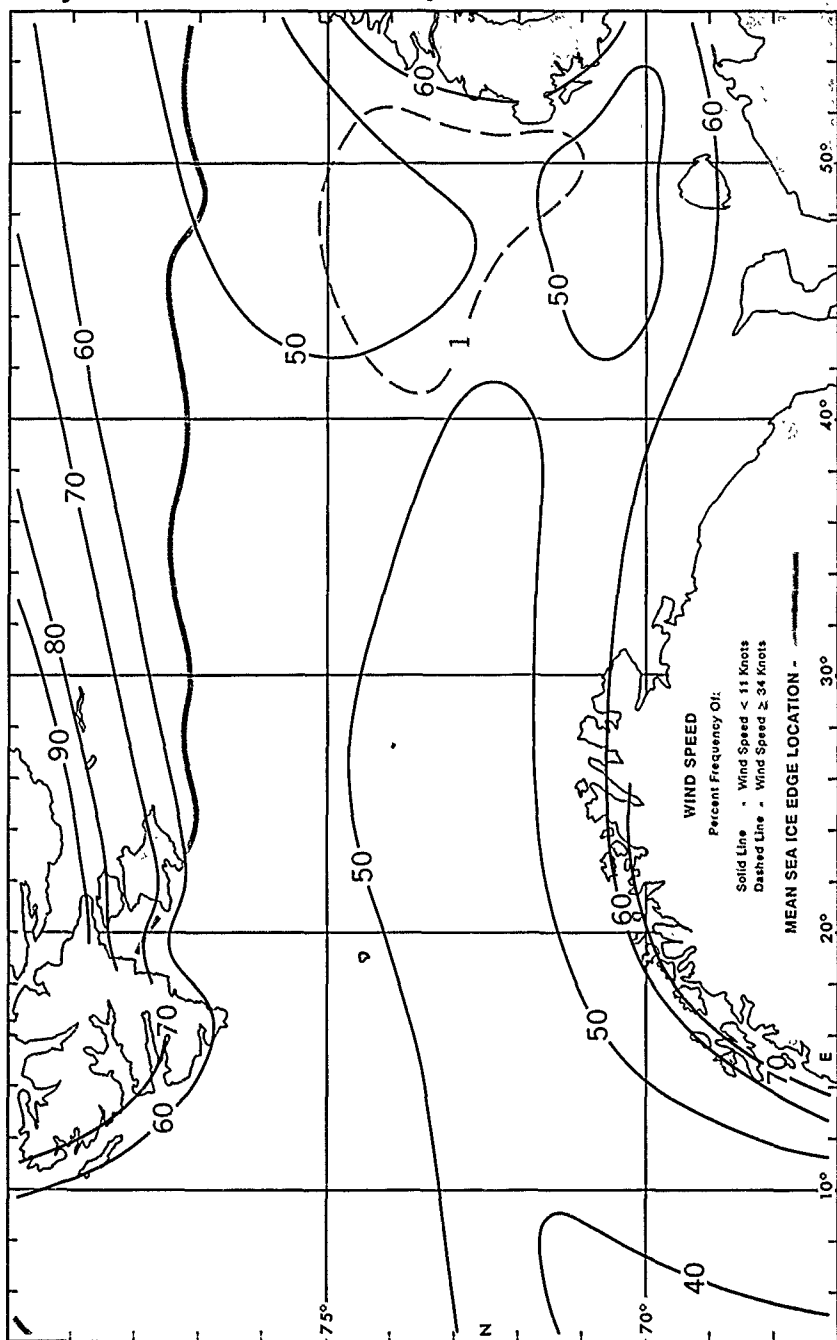
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

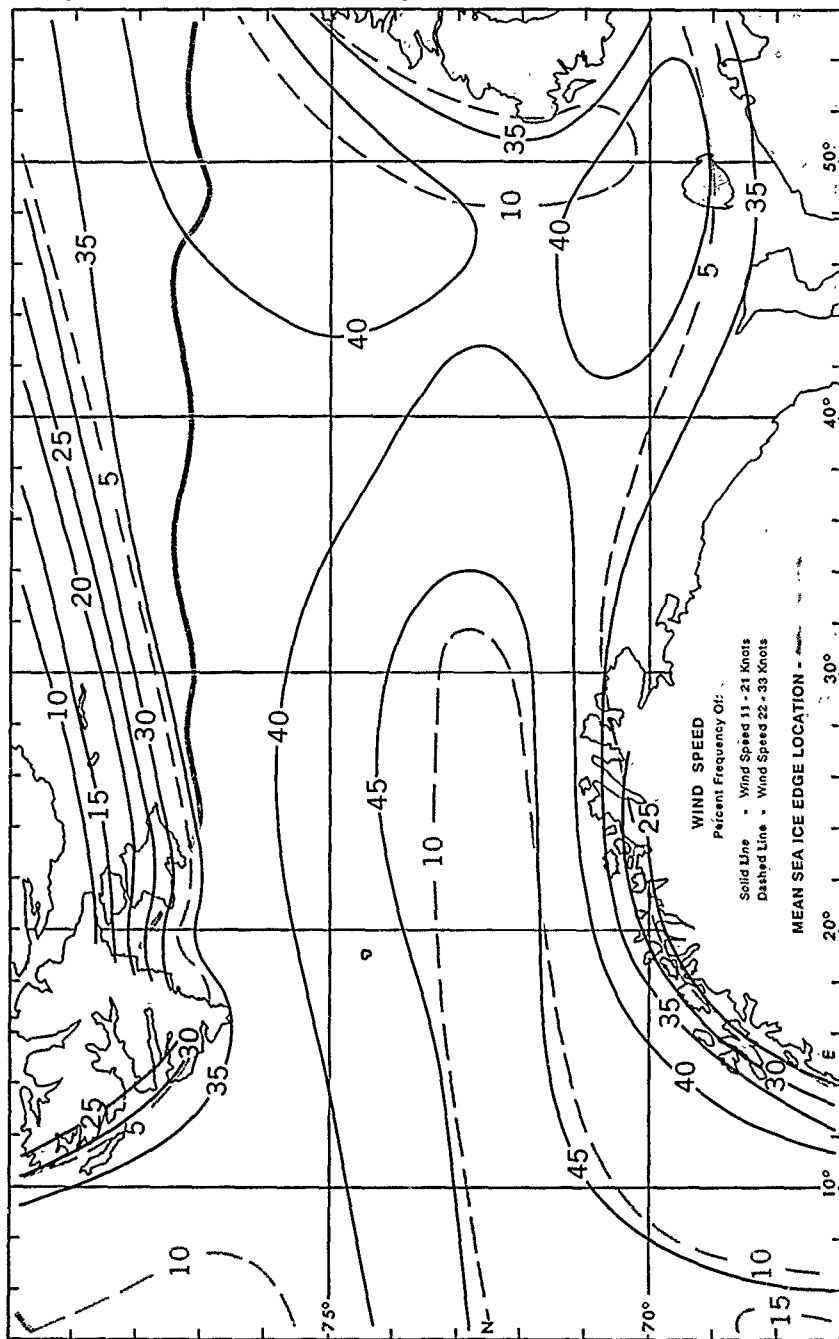
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

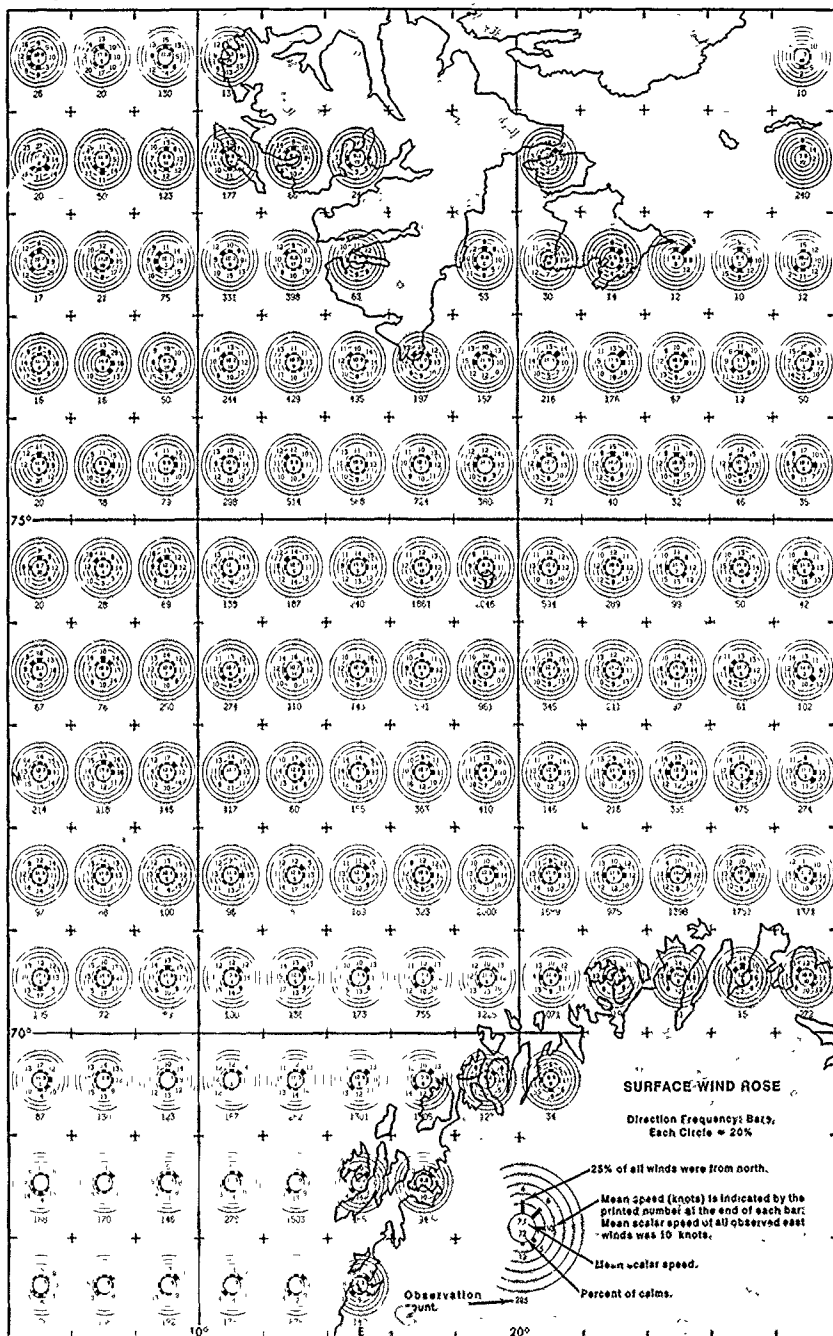
Wind Speed 11-21 and 22-33 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

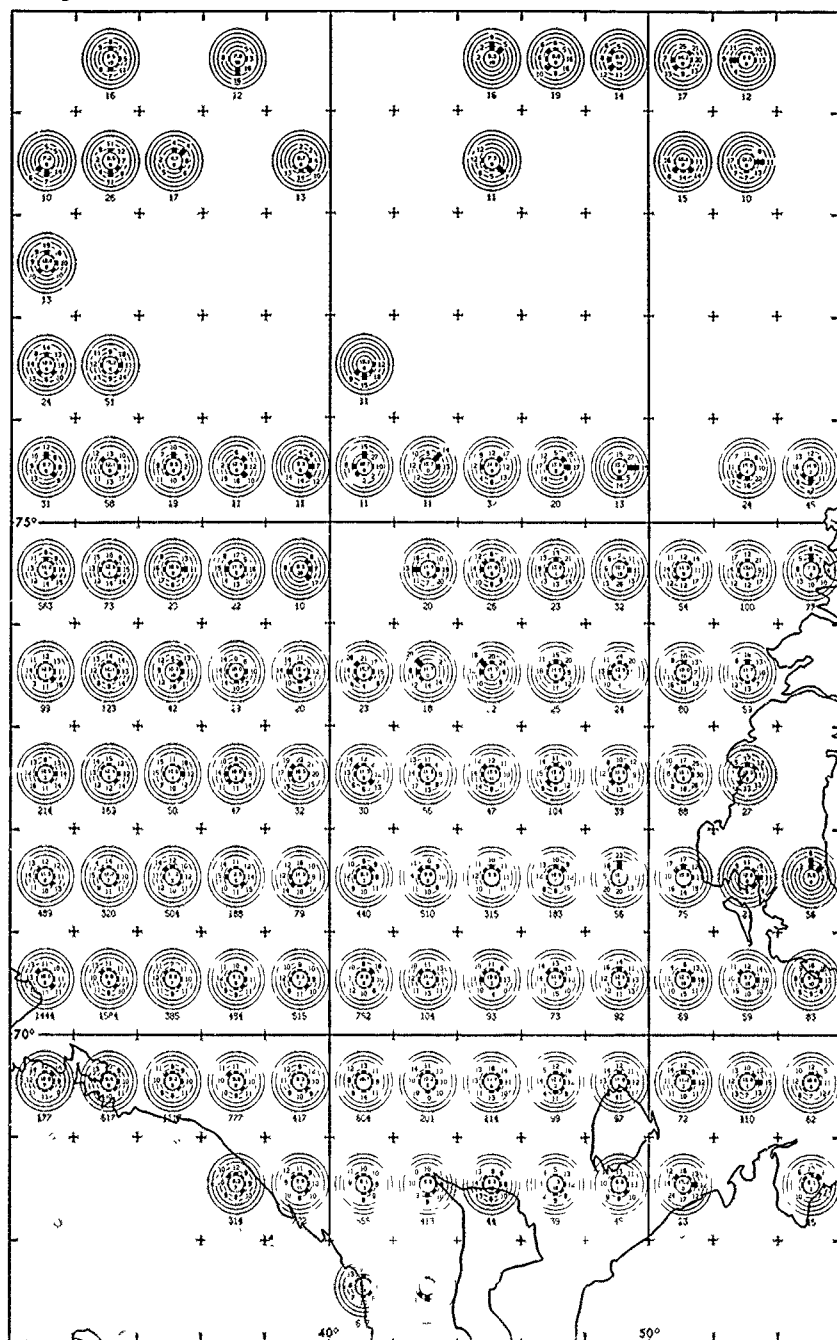
July

Surface Wind Roses



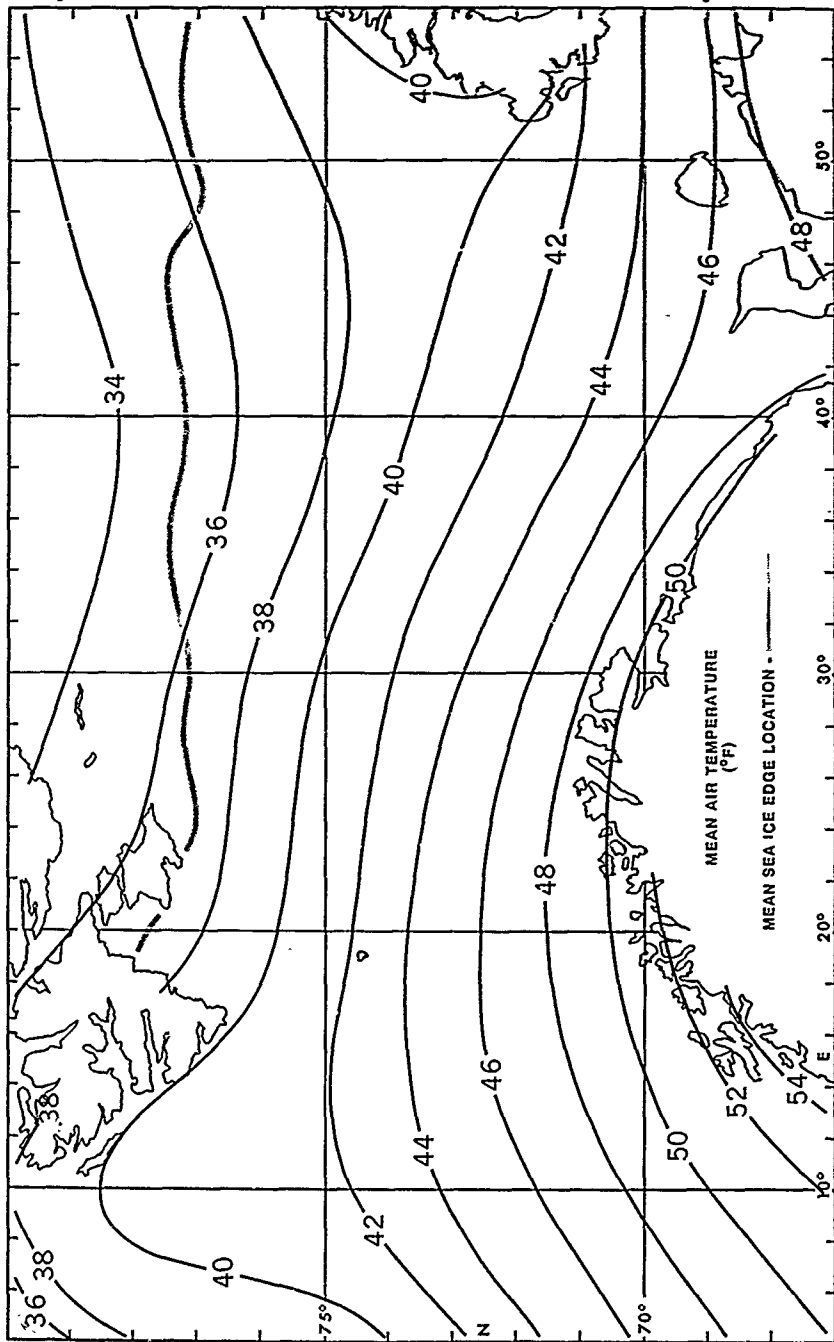
July

Surface Wind Roses



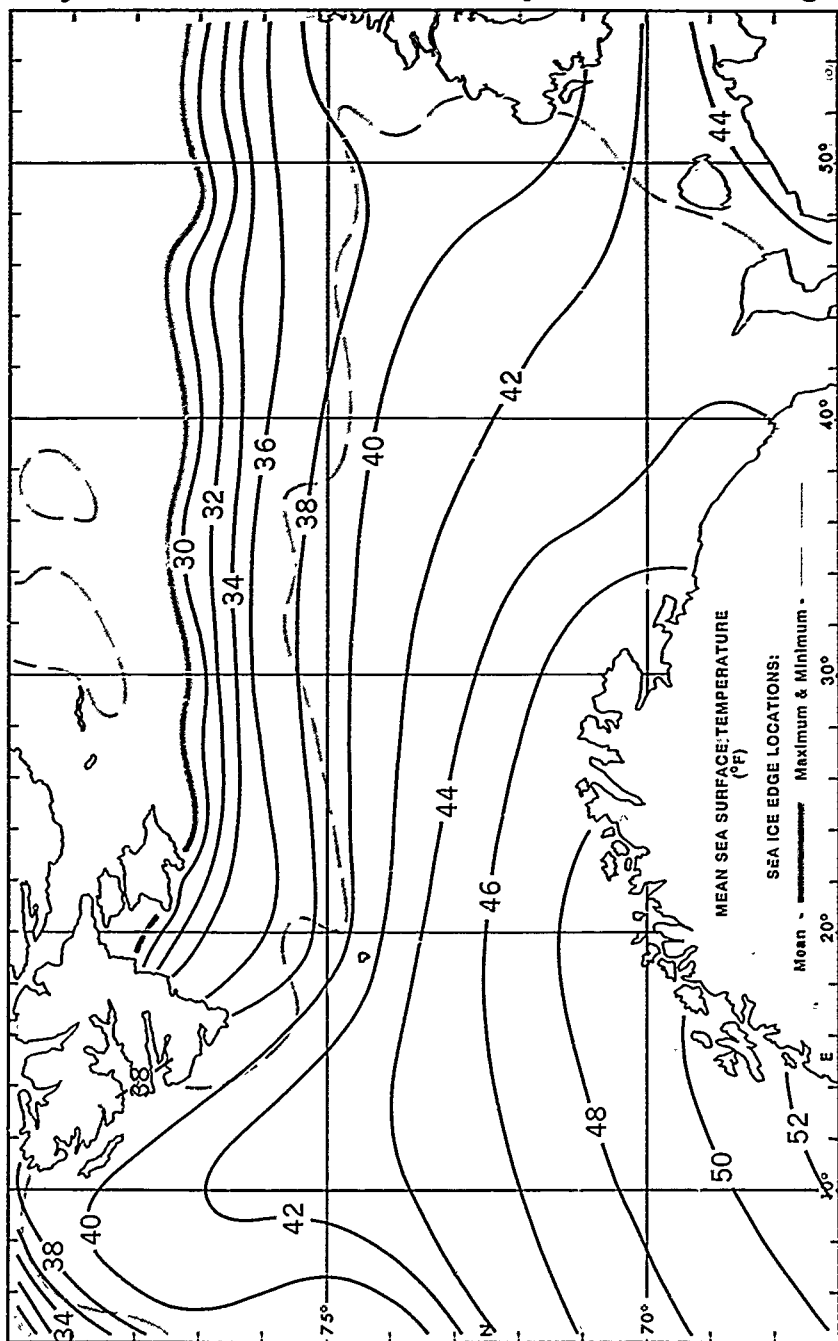
July

Mean Air Temperature



July

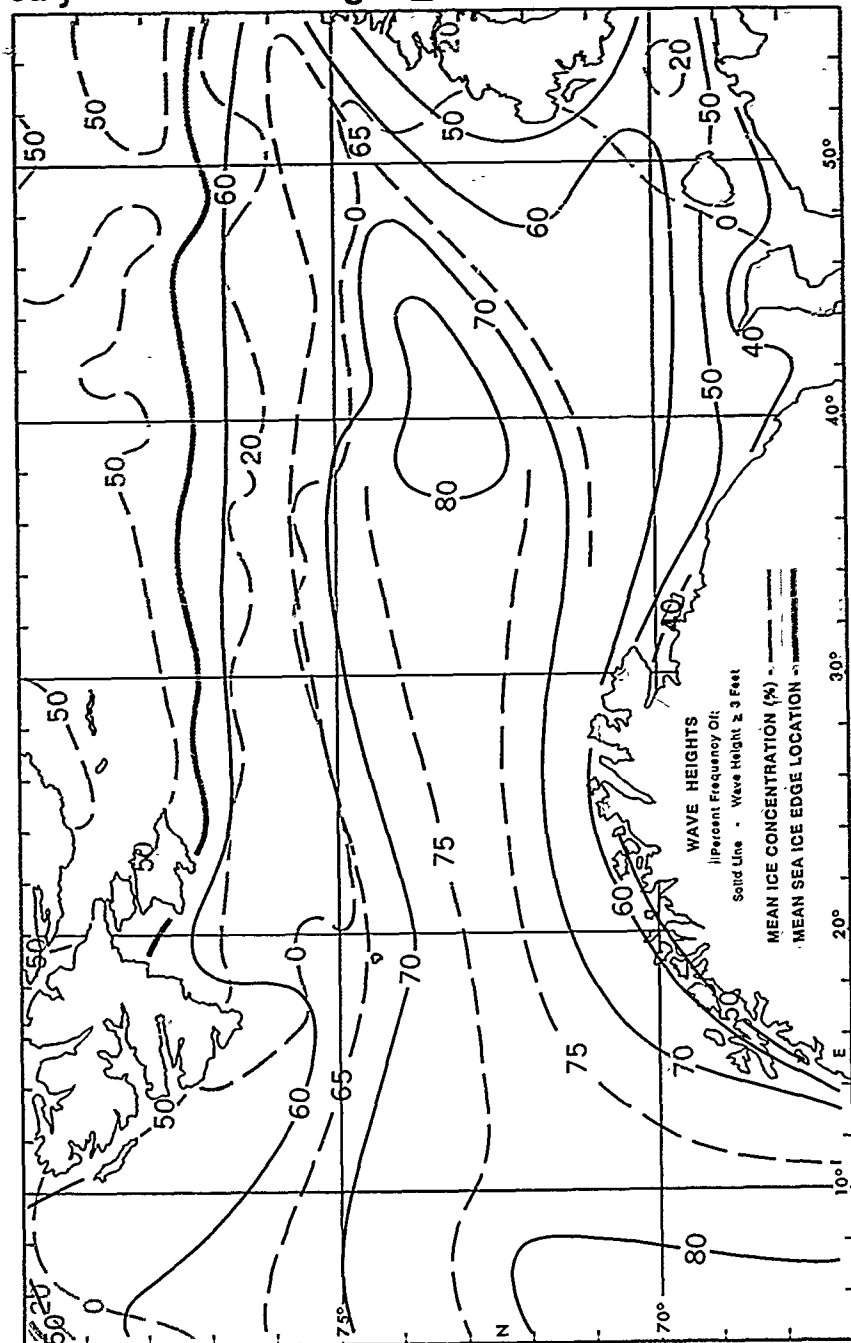
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

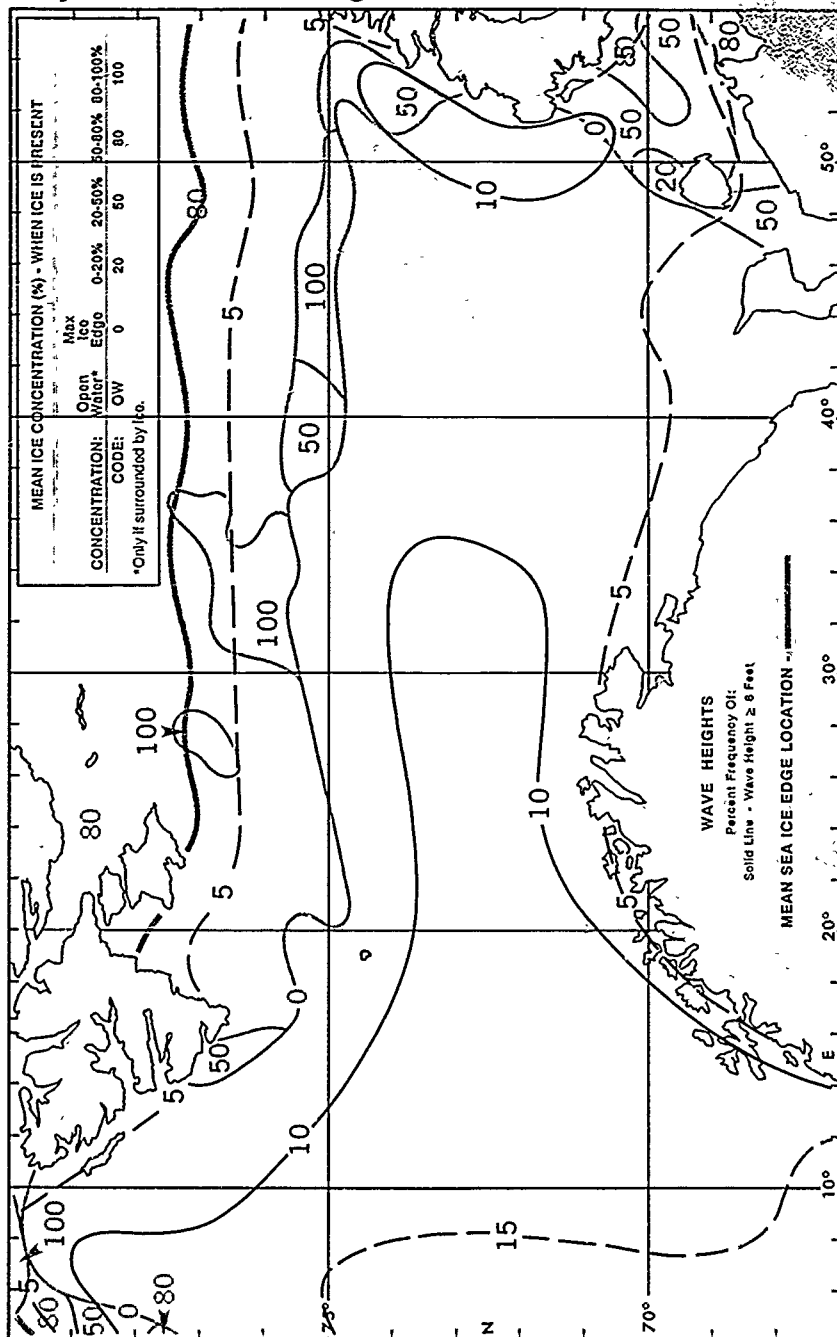
Wave Height ≥ 3 Ft. & Ice Concentration



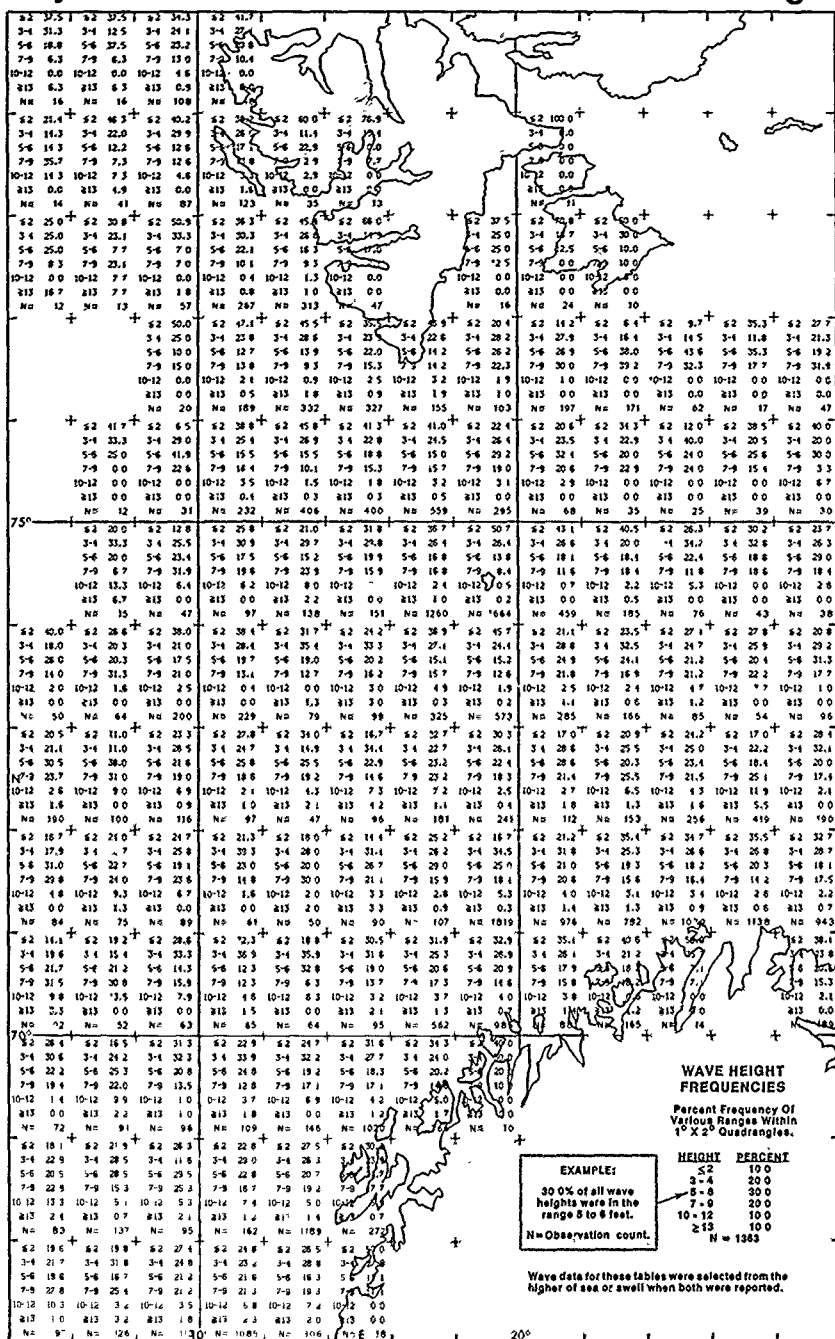
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

Wave Height ≥ 8 Ft. & Ice Concentration

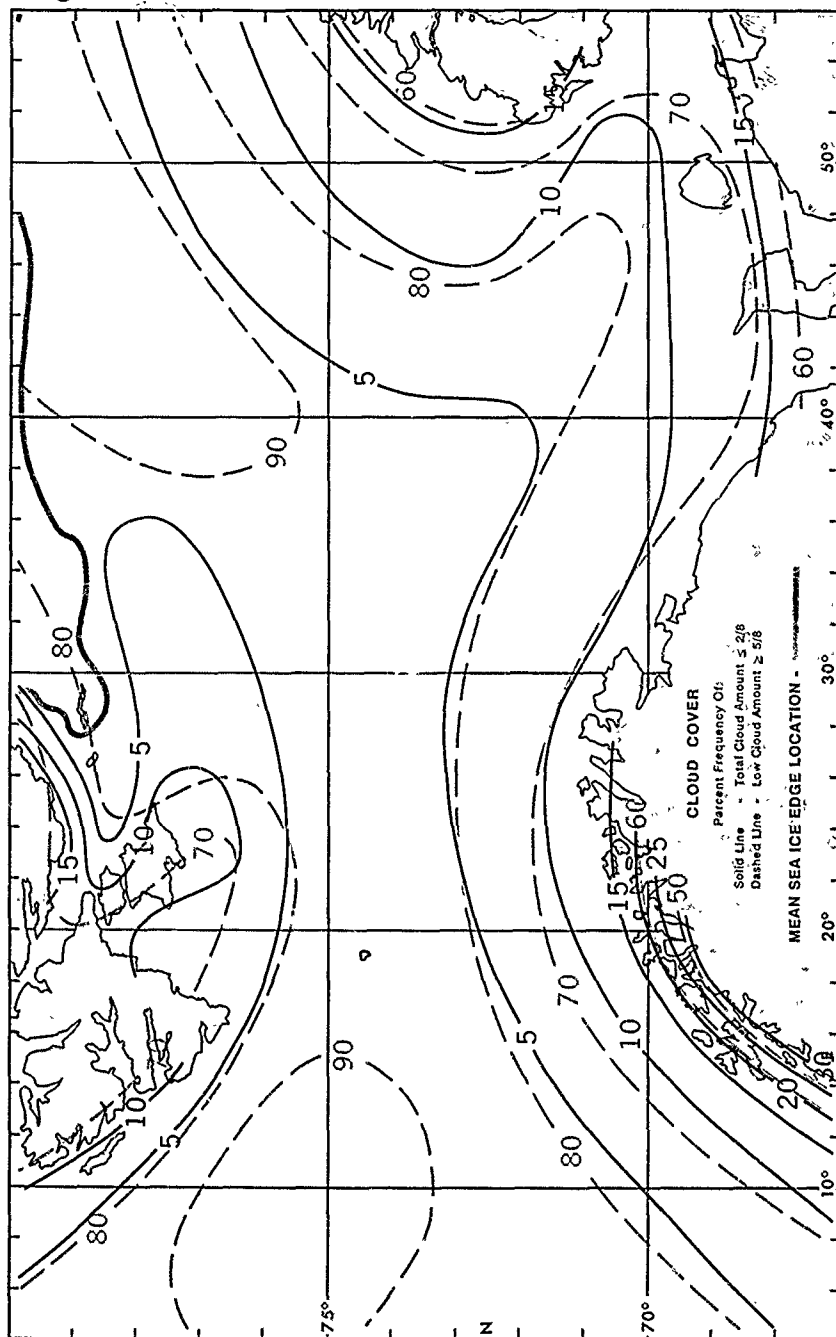


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



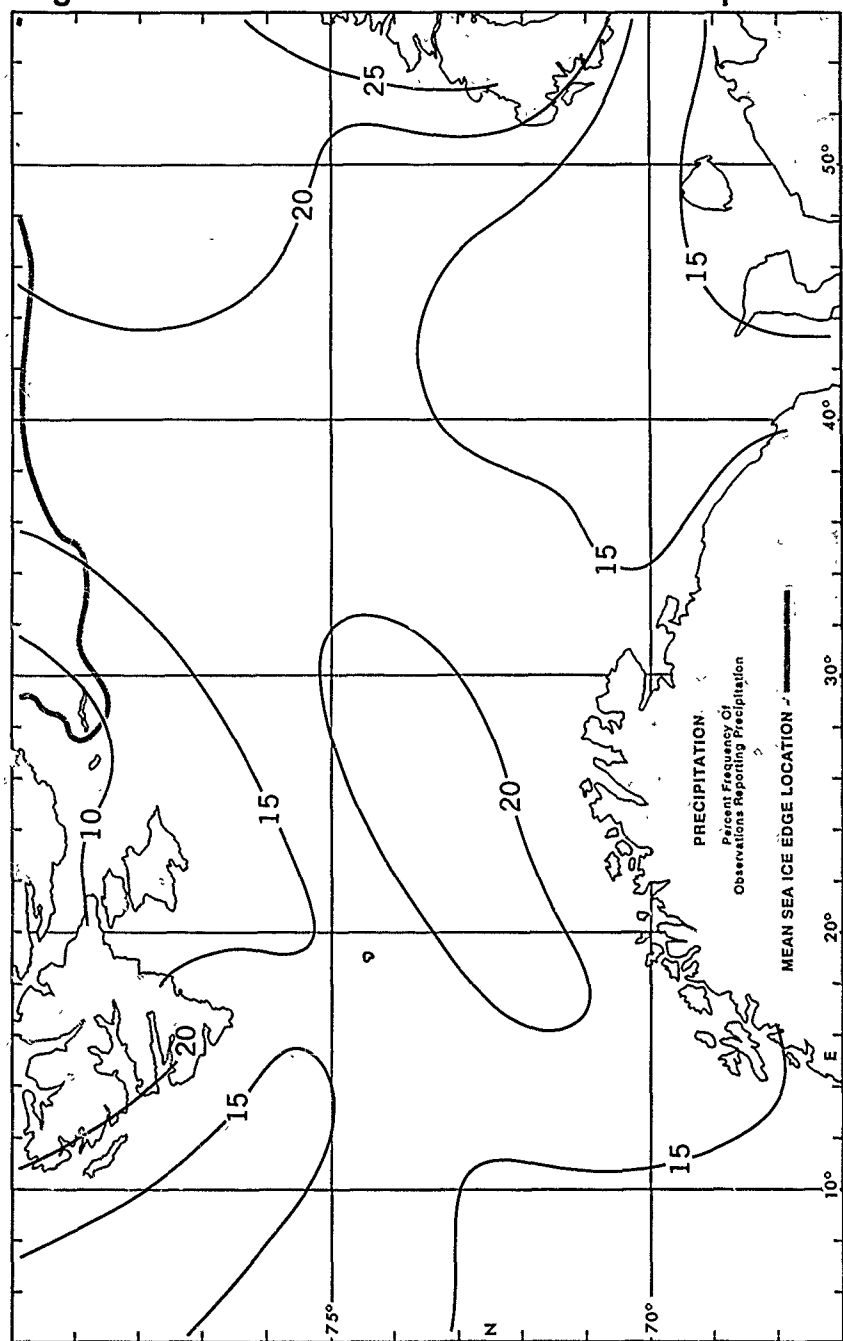
August

Clouds



August

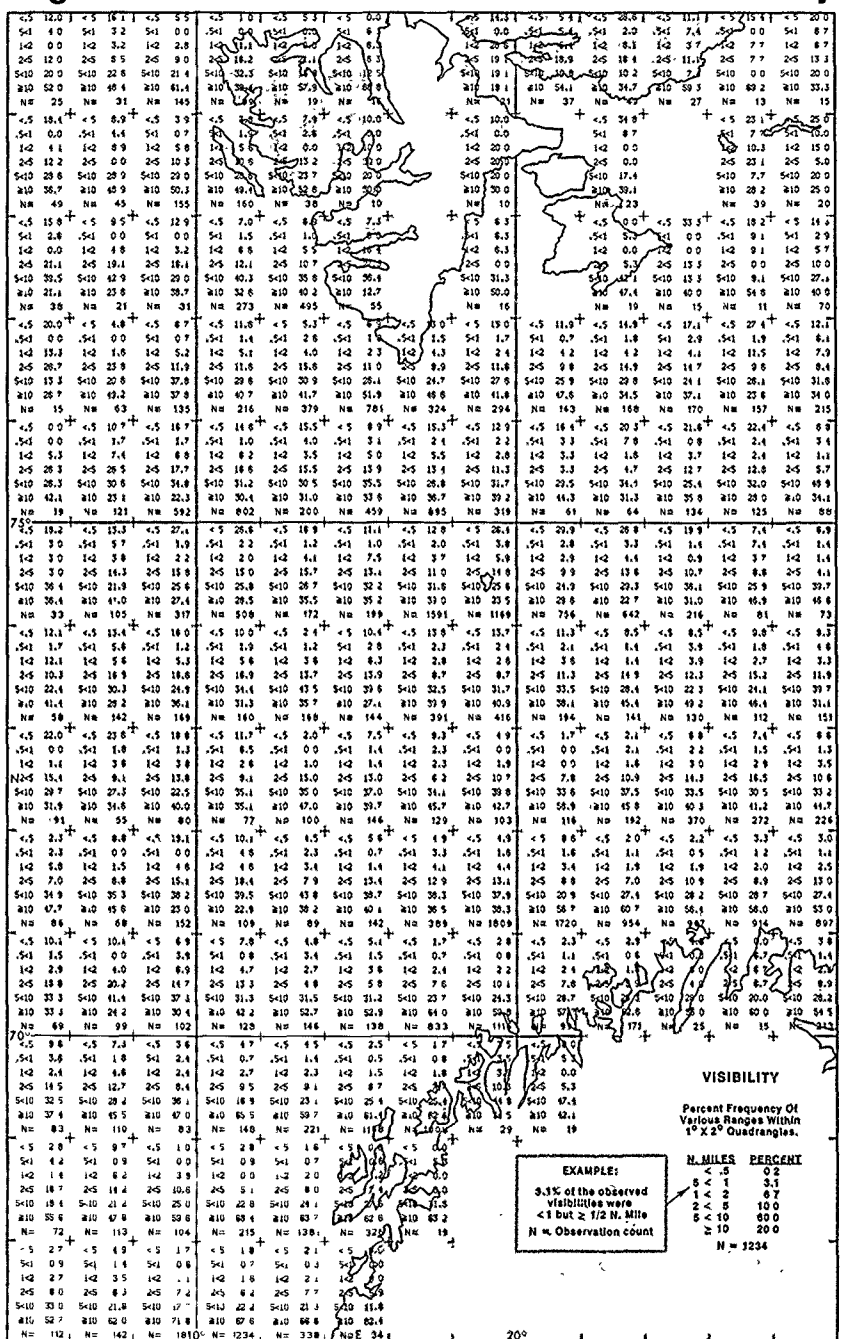
Precipitation



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

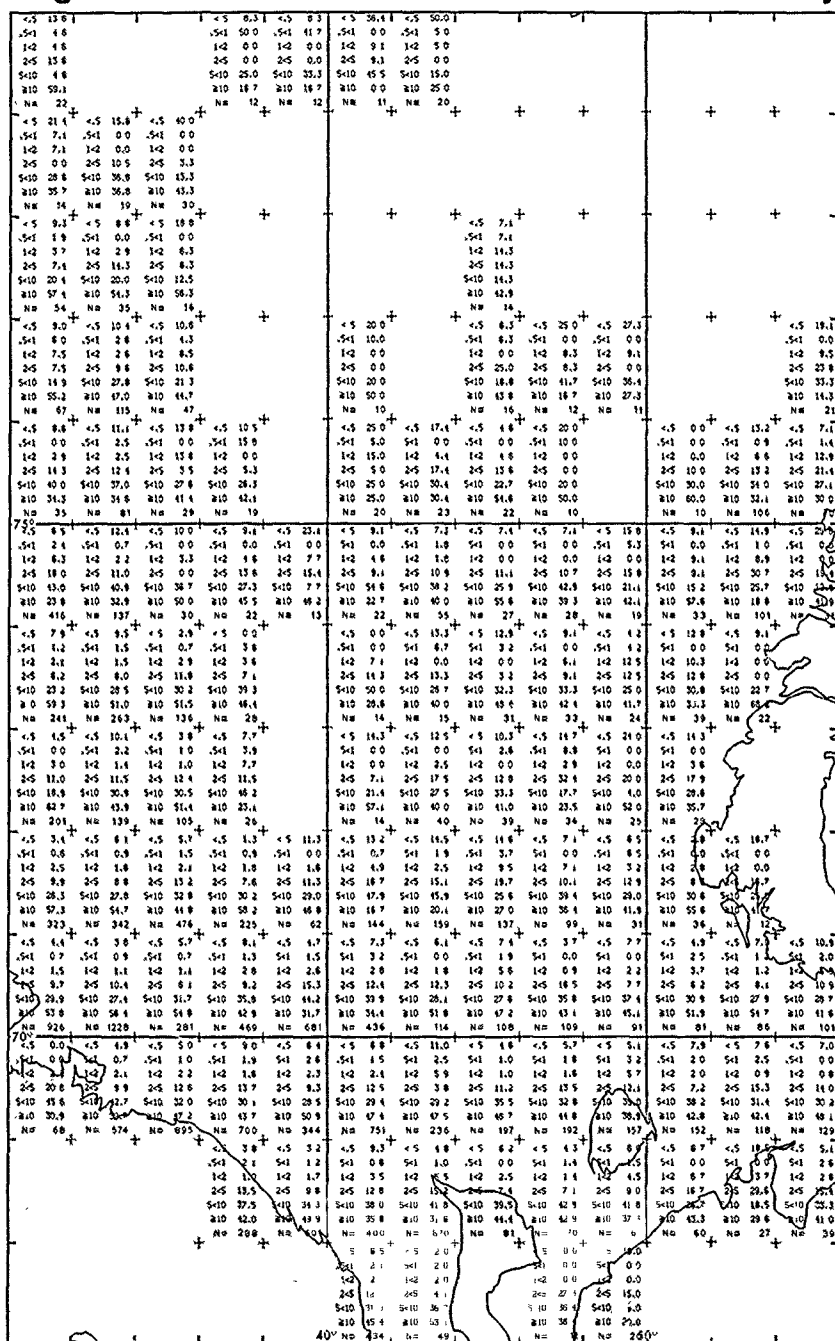
August

Visibility



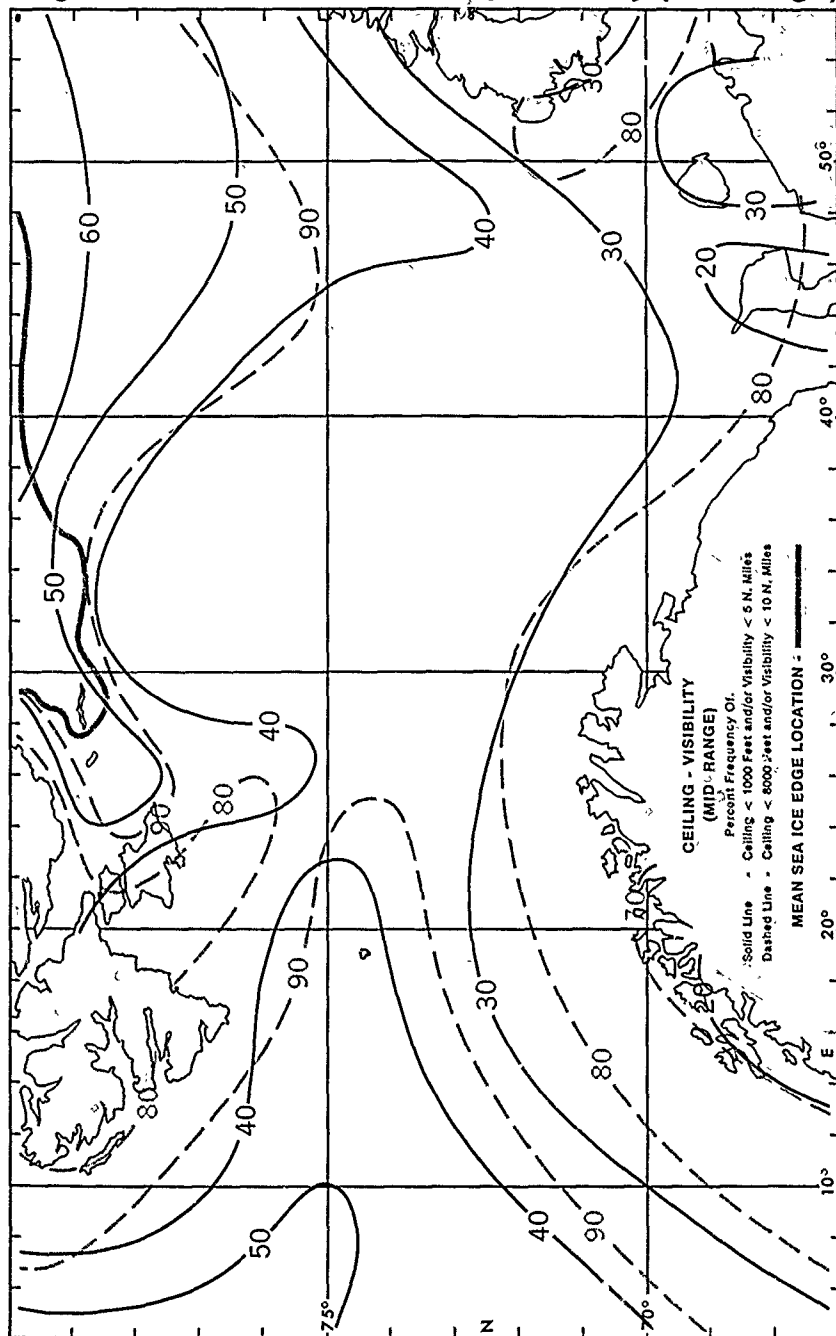
August

Visibility



August

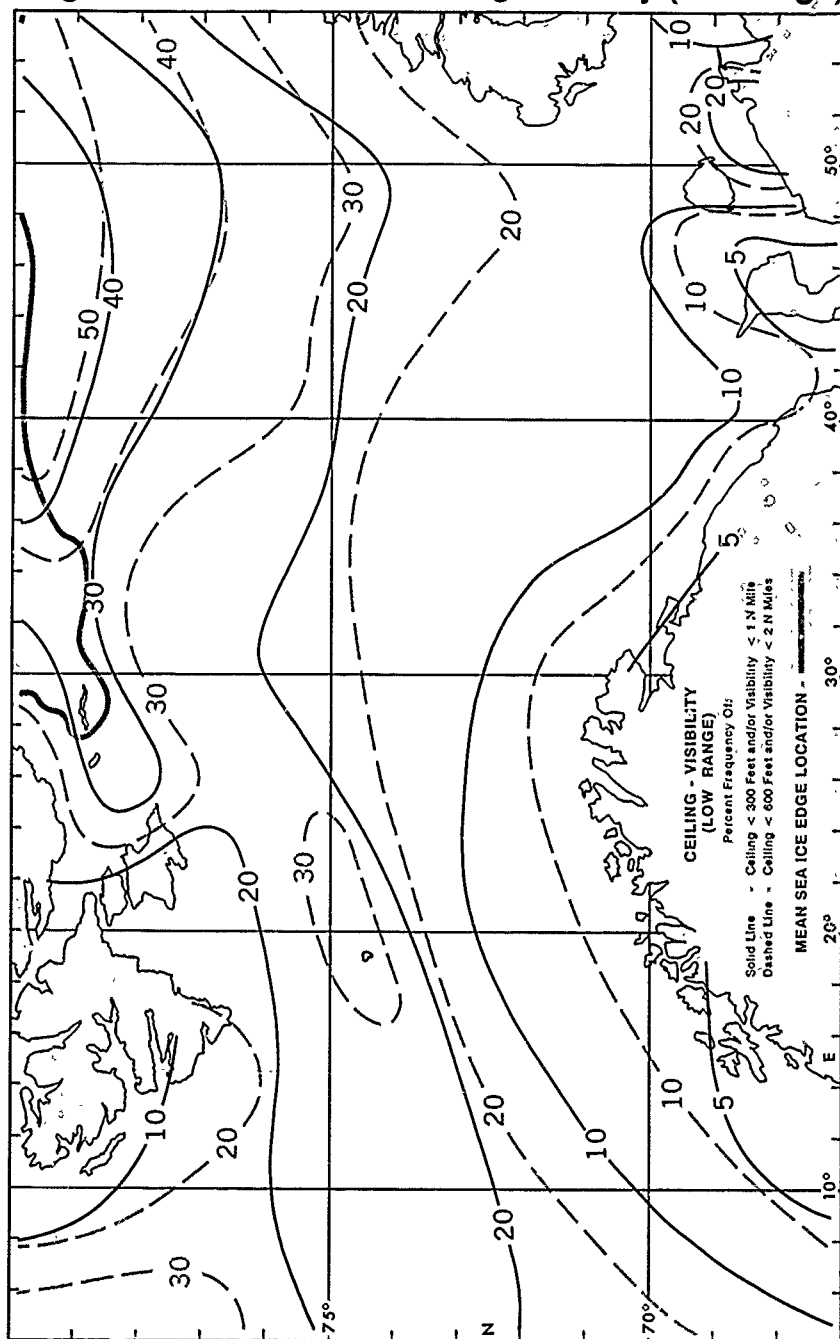
Ceiling-Visibility (mid range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

August

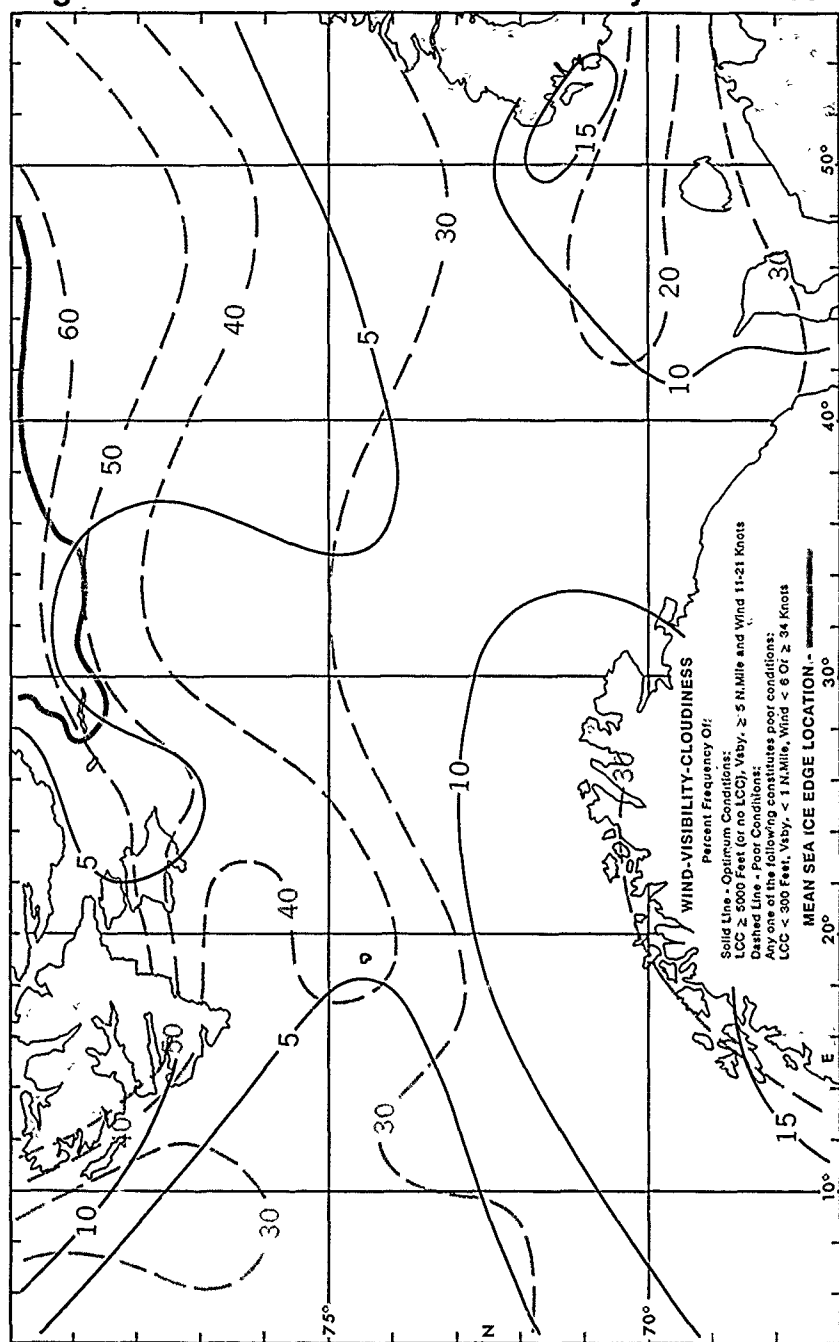
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

August

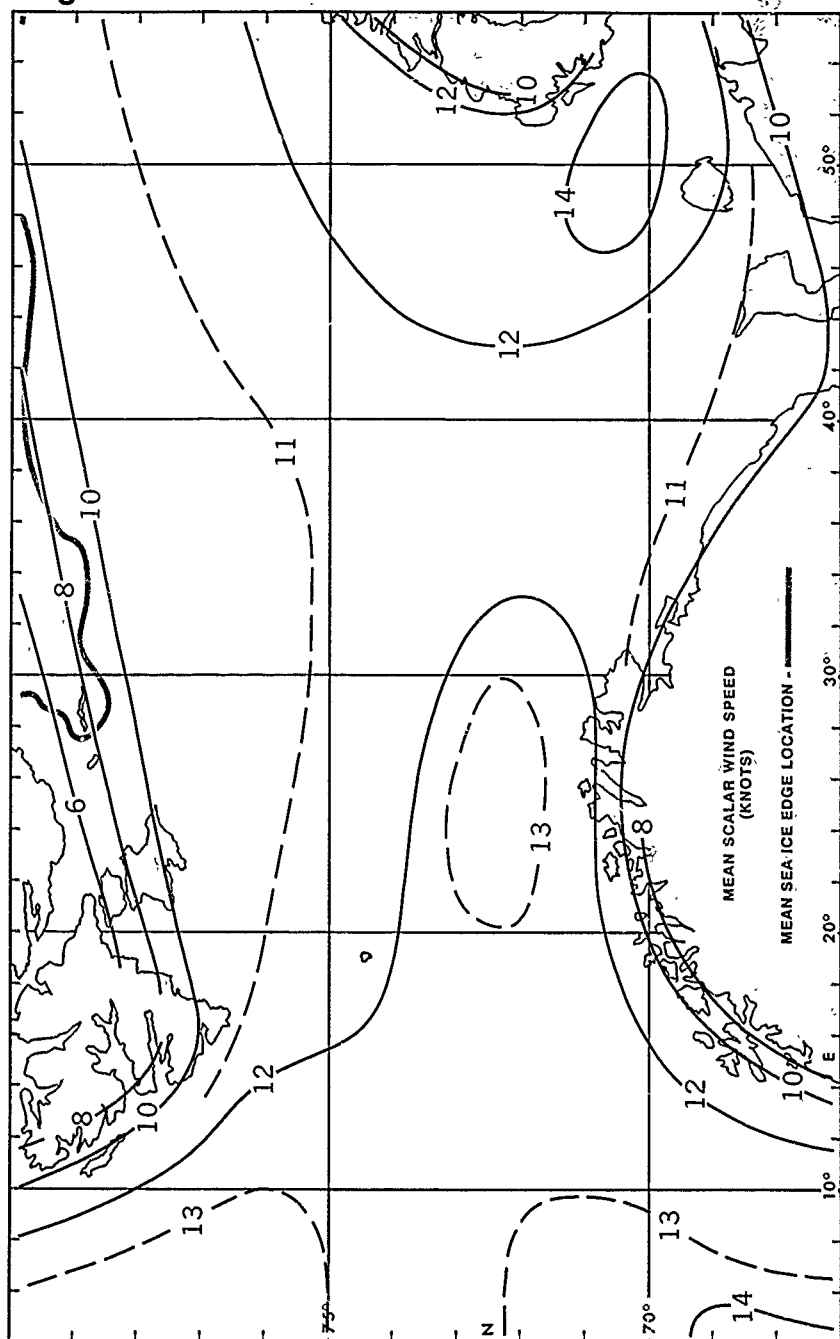
Wind-Visibility-Cloudiness



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

August

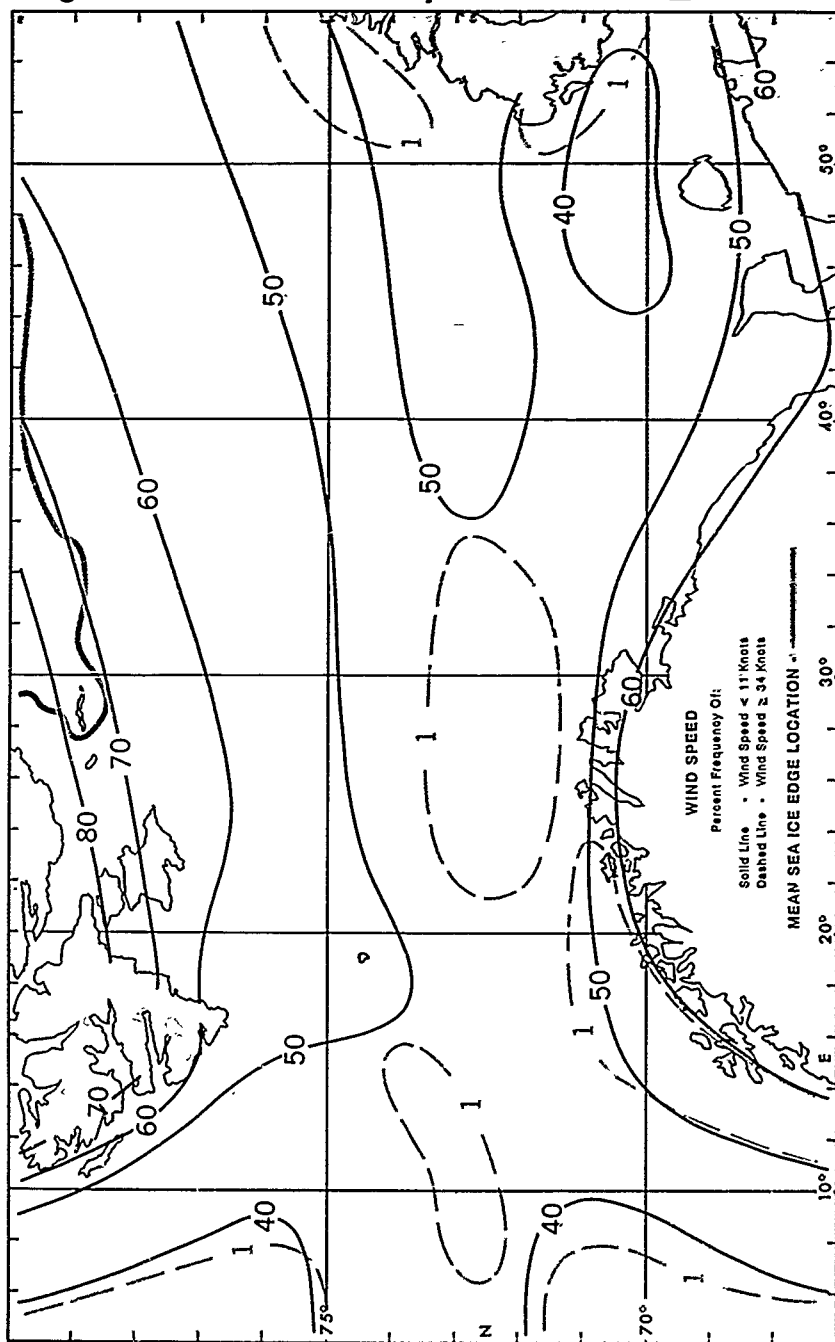
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

August

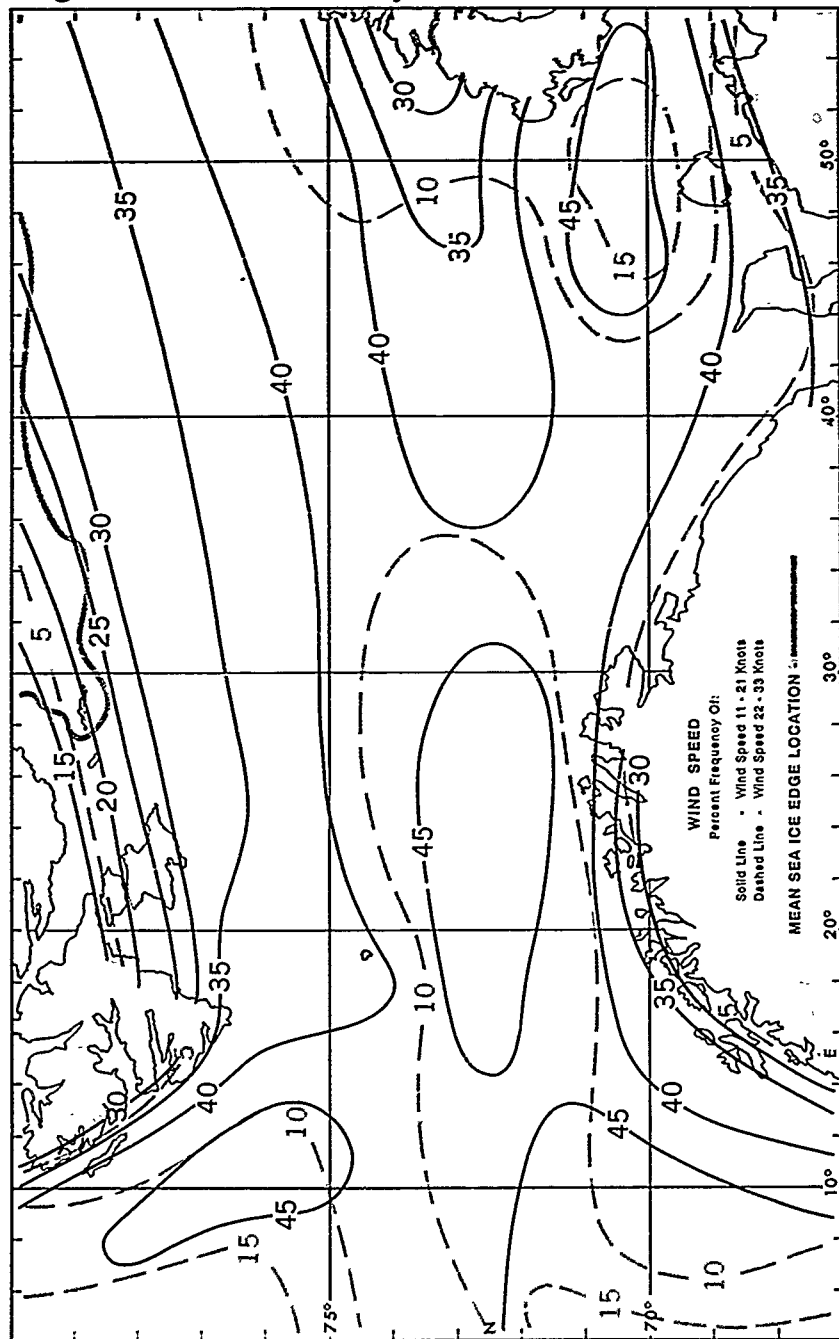
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

August

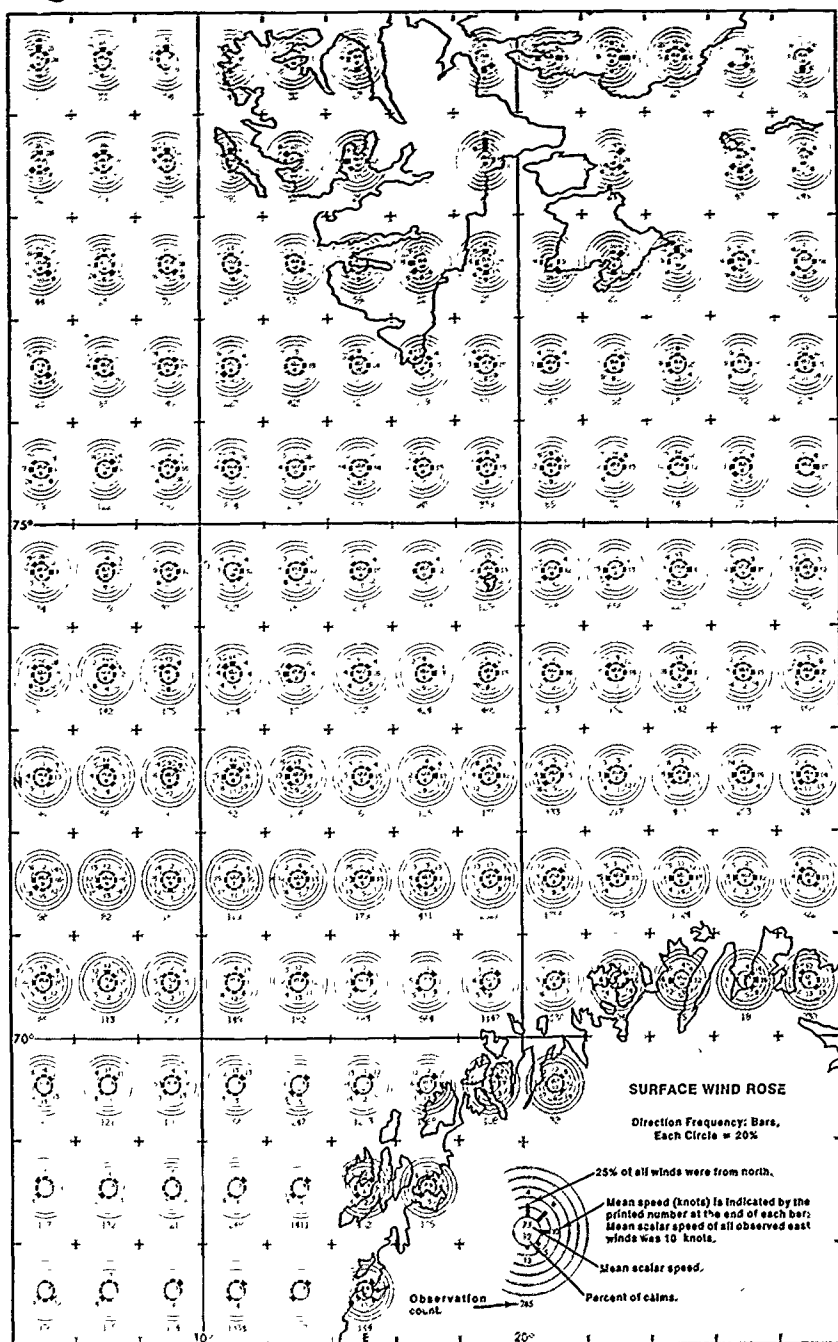
Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

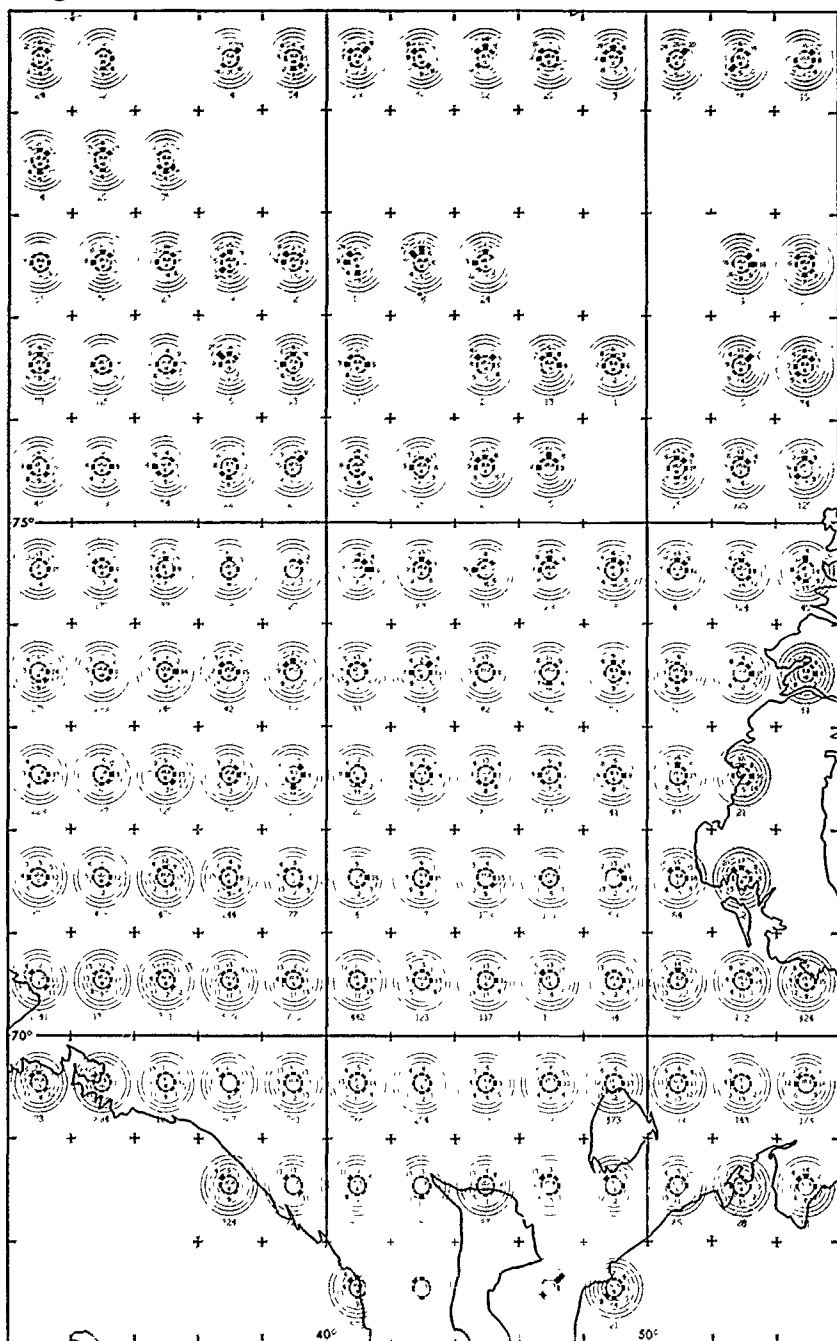
August

Surface Wind Roses



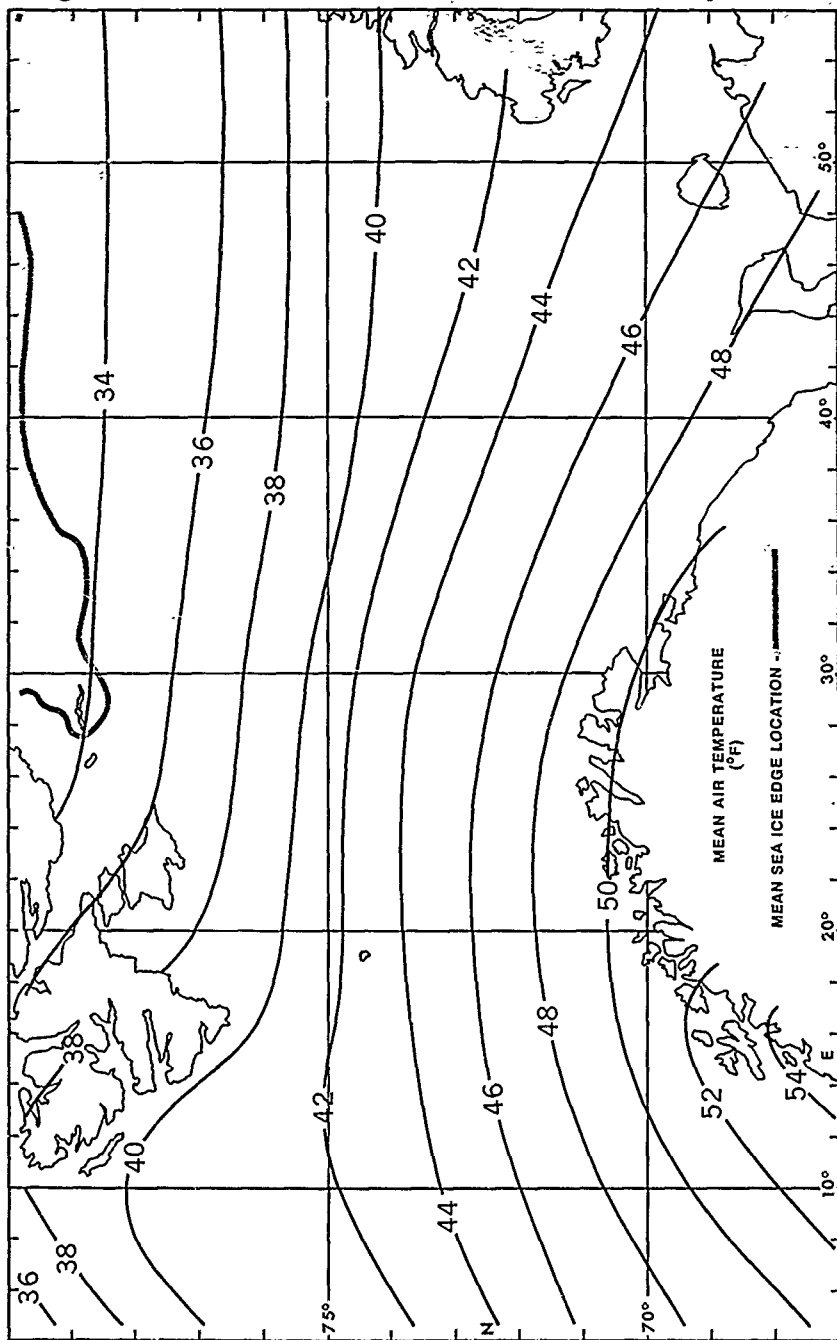
August

Surface Wind Roses



August

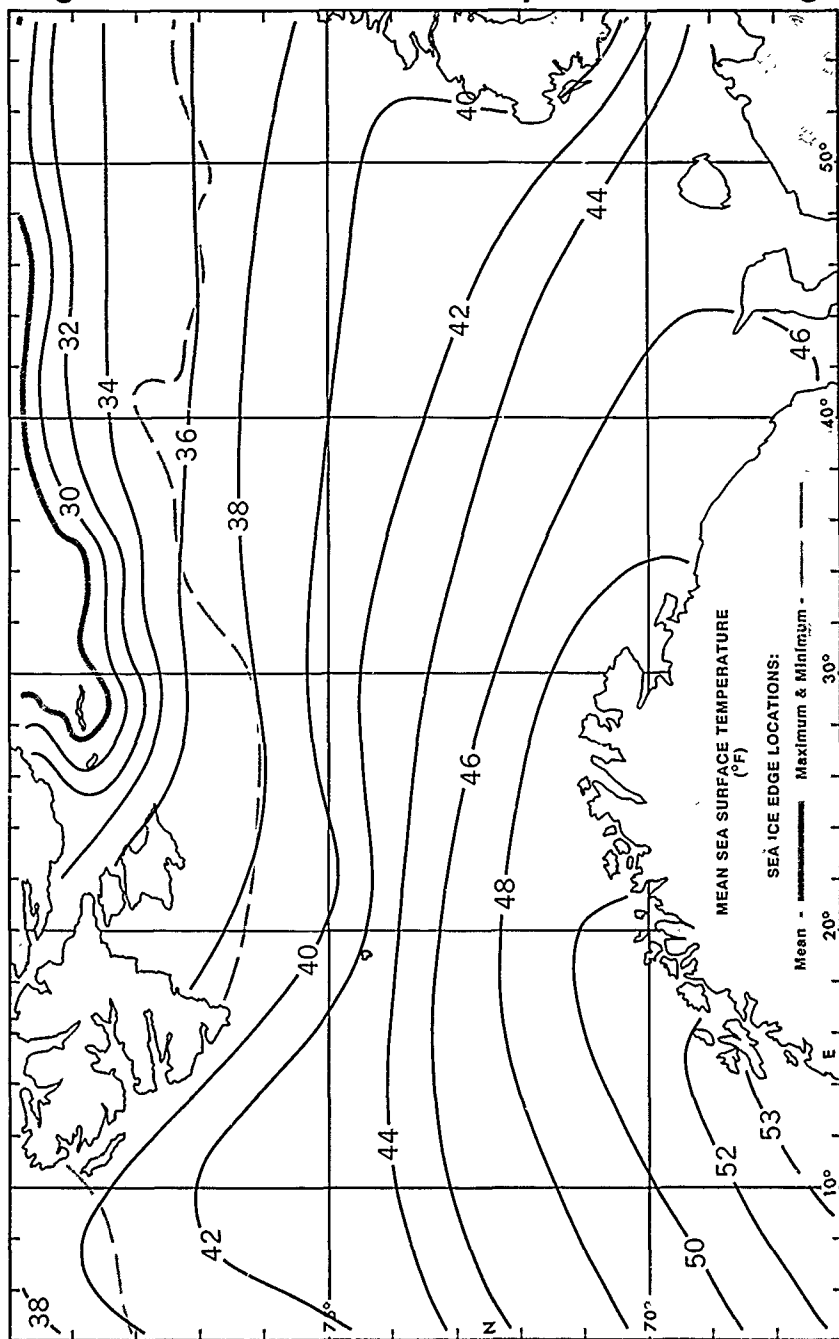
Mean Air Temperature



NOTE - Analysis beyond the mean ice edge is highly subjective due to low observation counts.

August

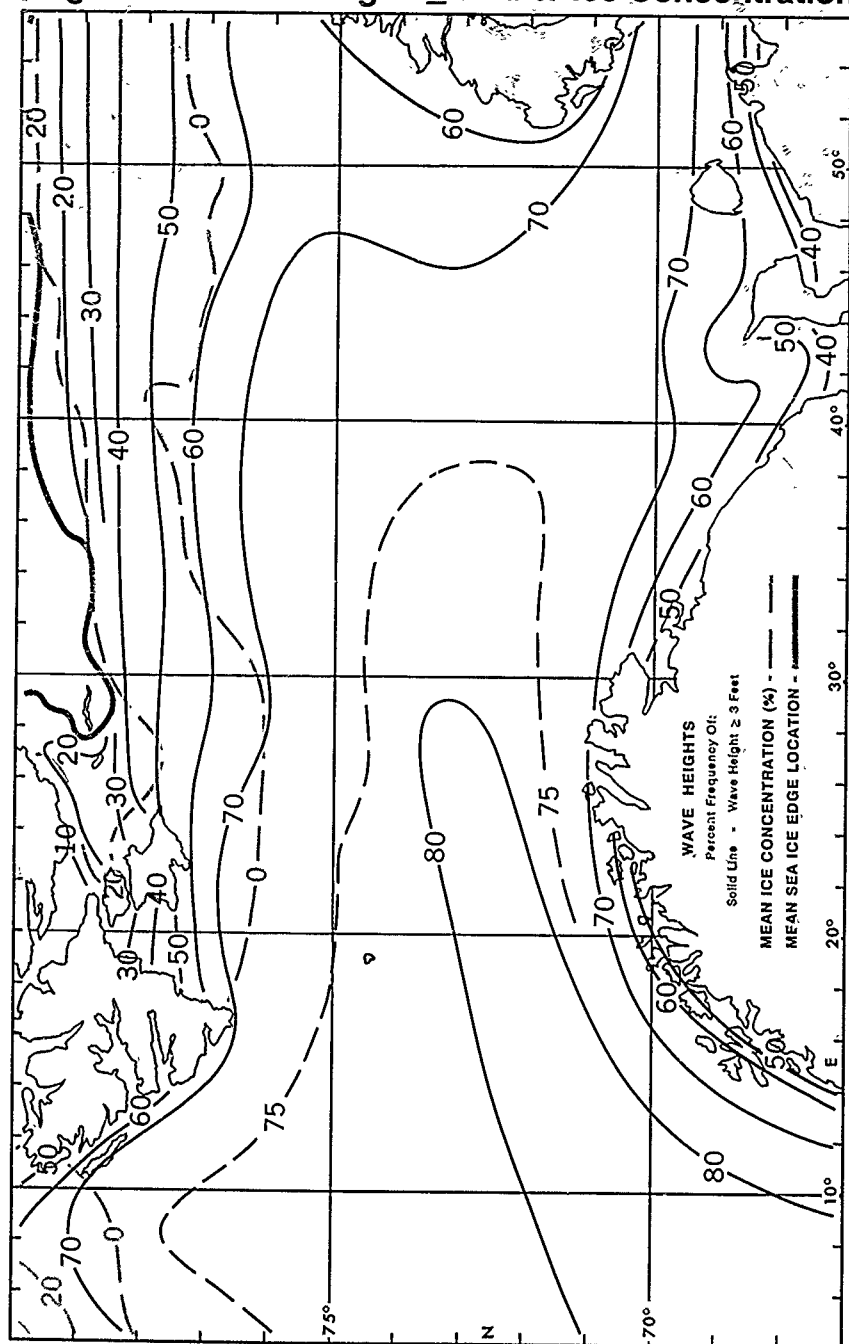
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

August

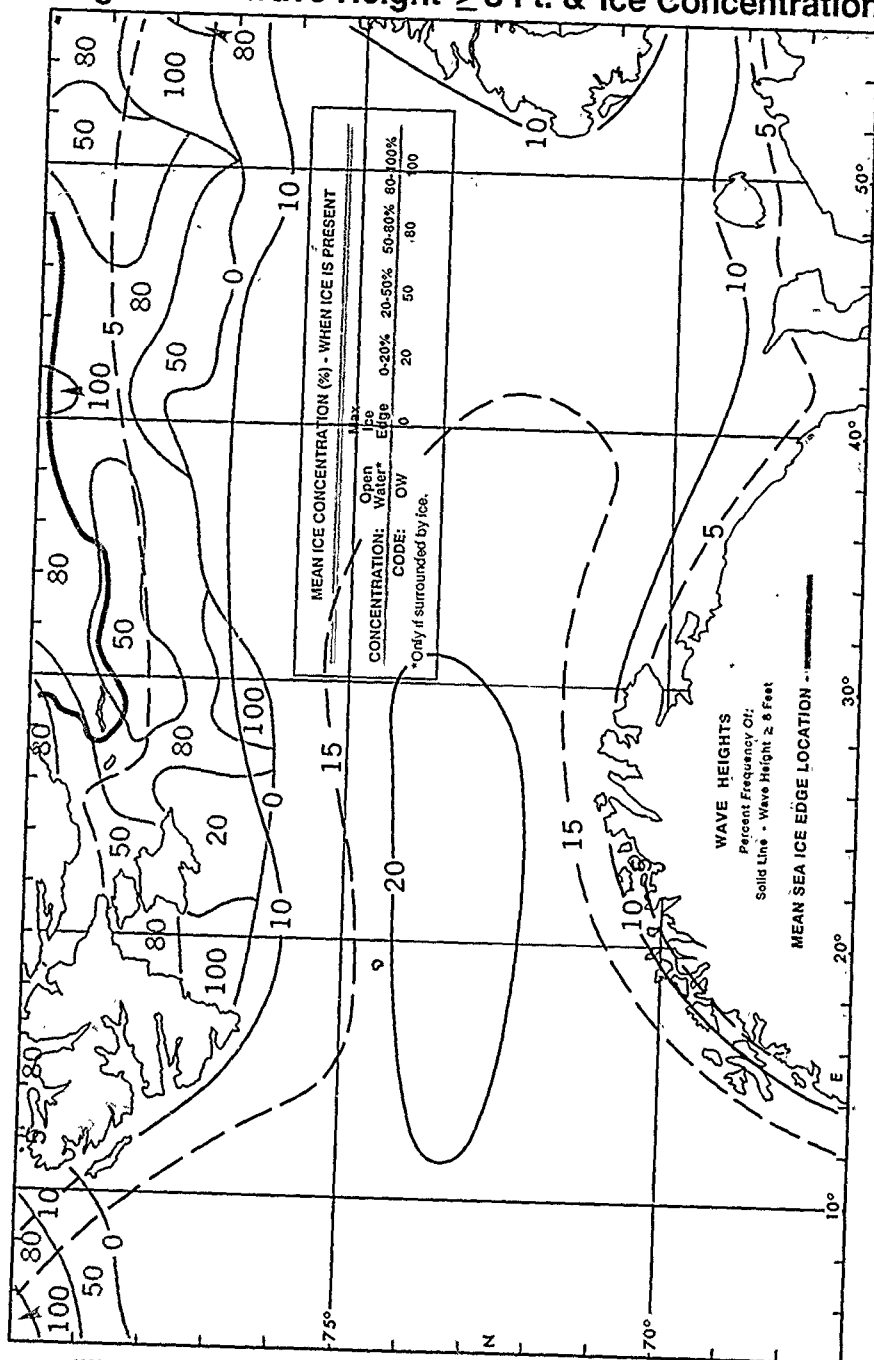
Wave Height ≥ 3 Ft. & Ice Concentration



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

August

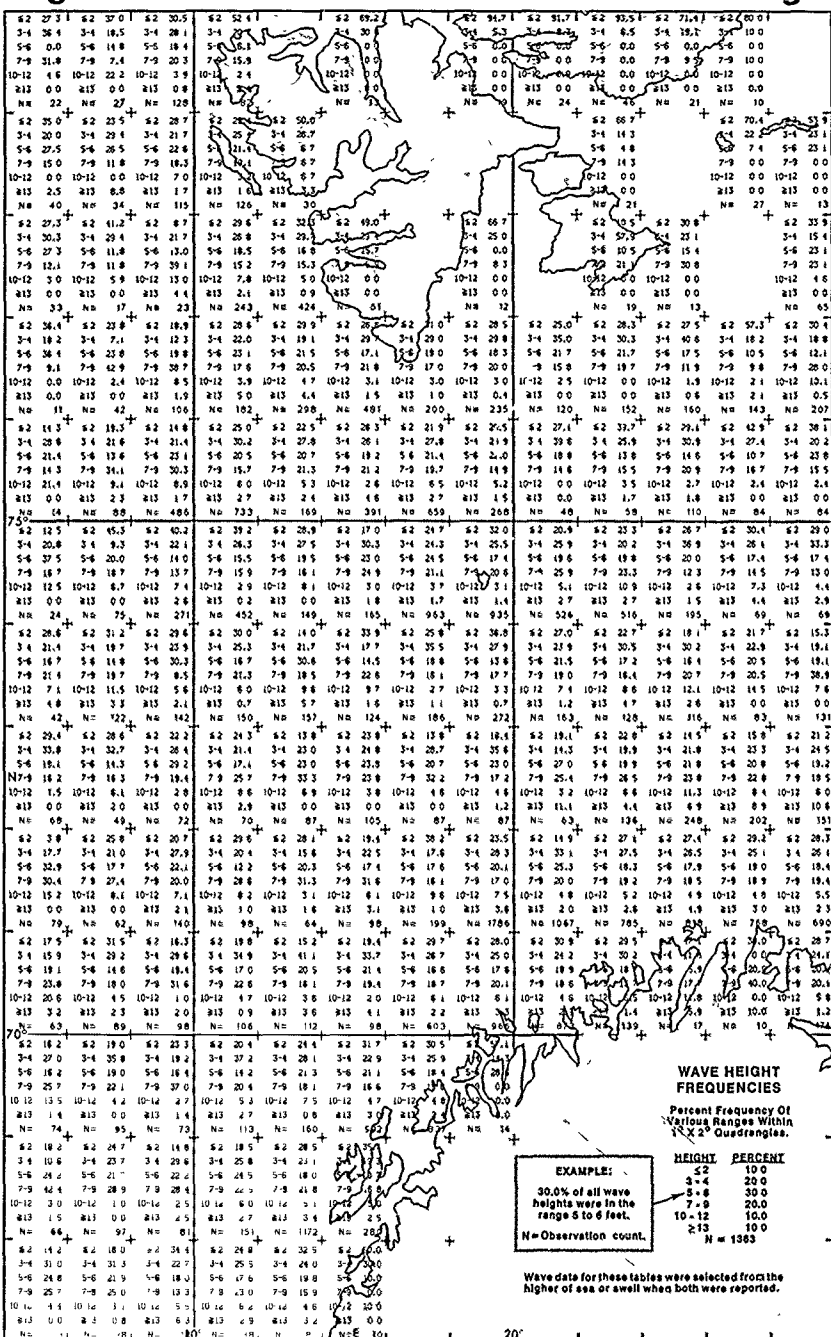
Wave Height ≥ 8 Ft. & Ice Concentration



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts

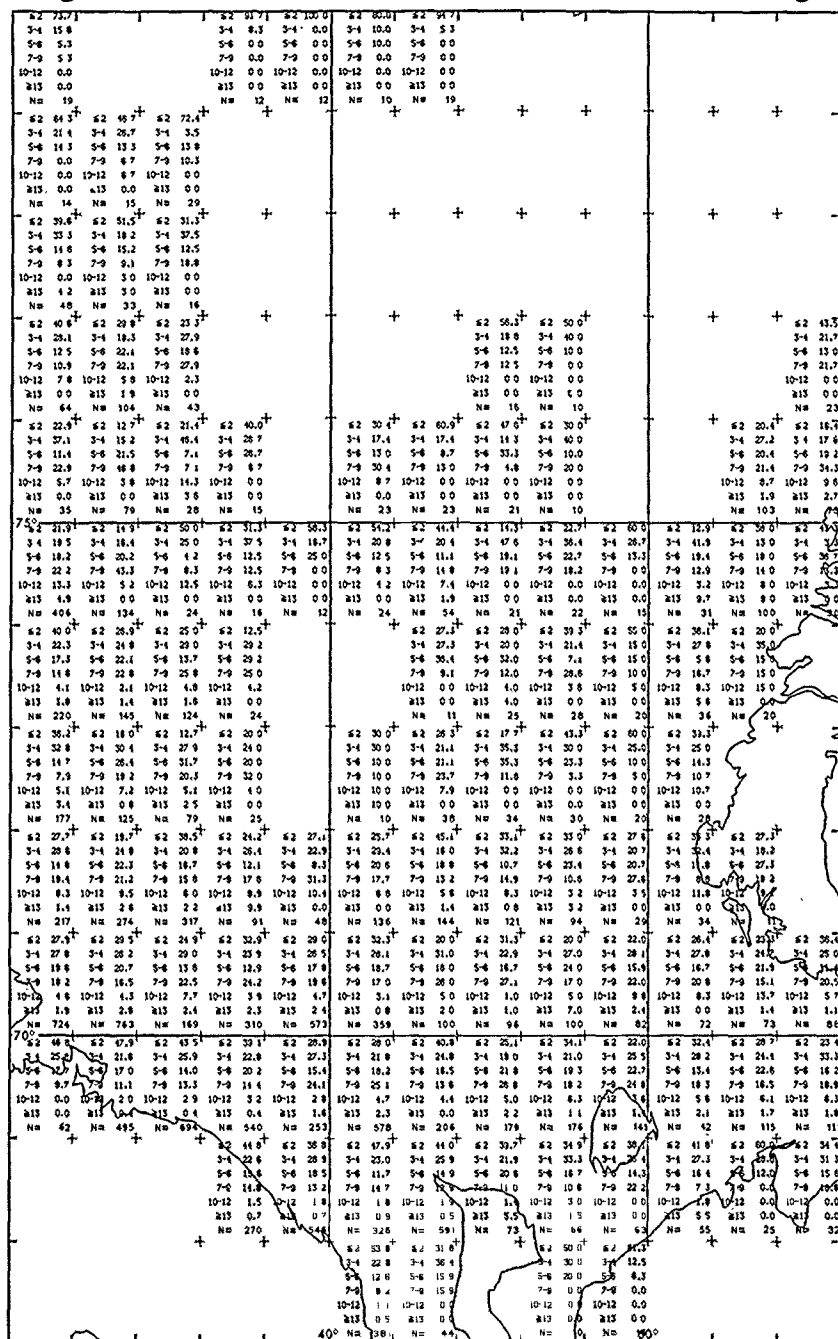
August

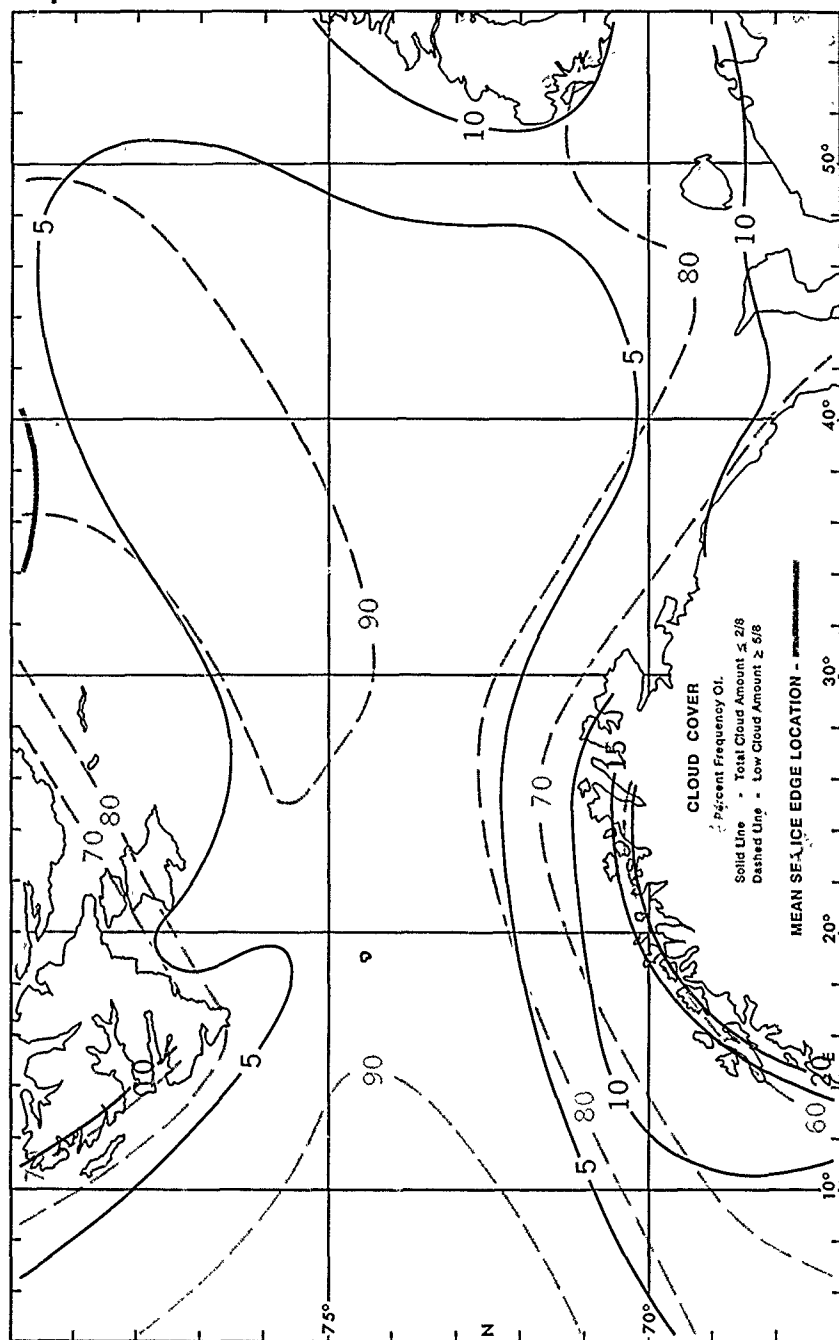
Wave Height



August

Wave Height

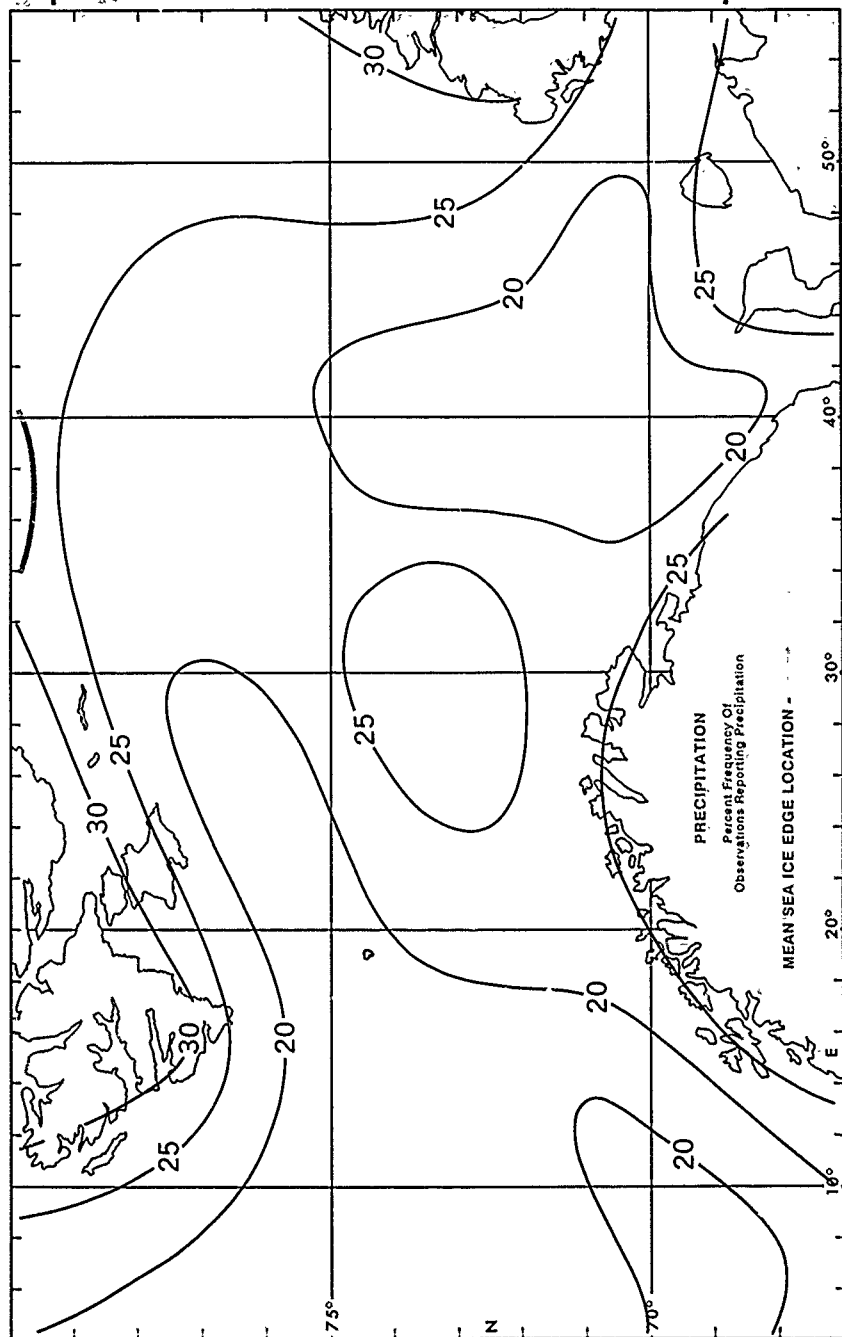




NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

September

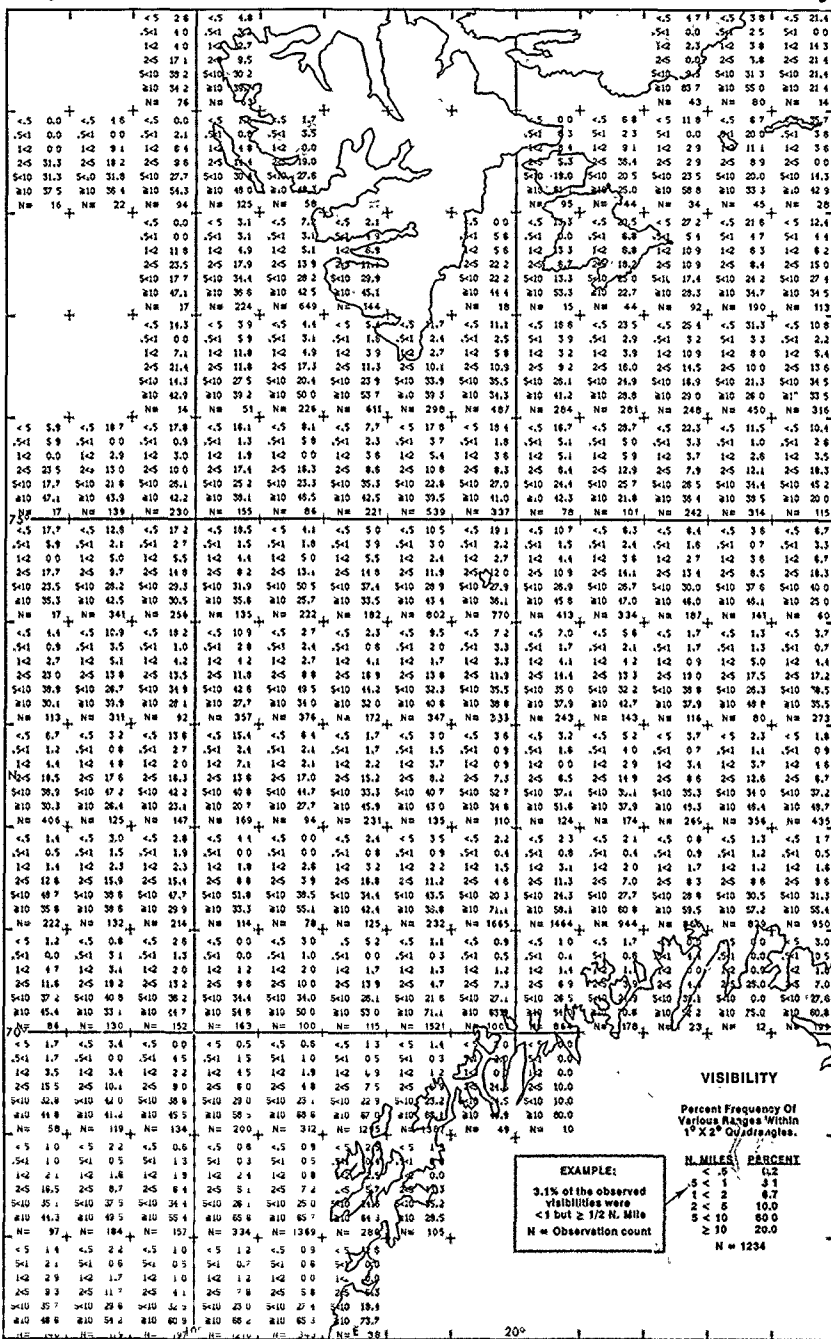
Precipitation



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

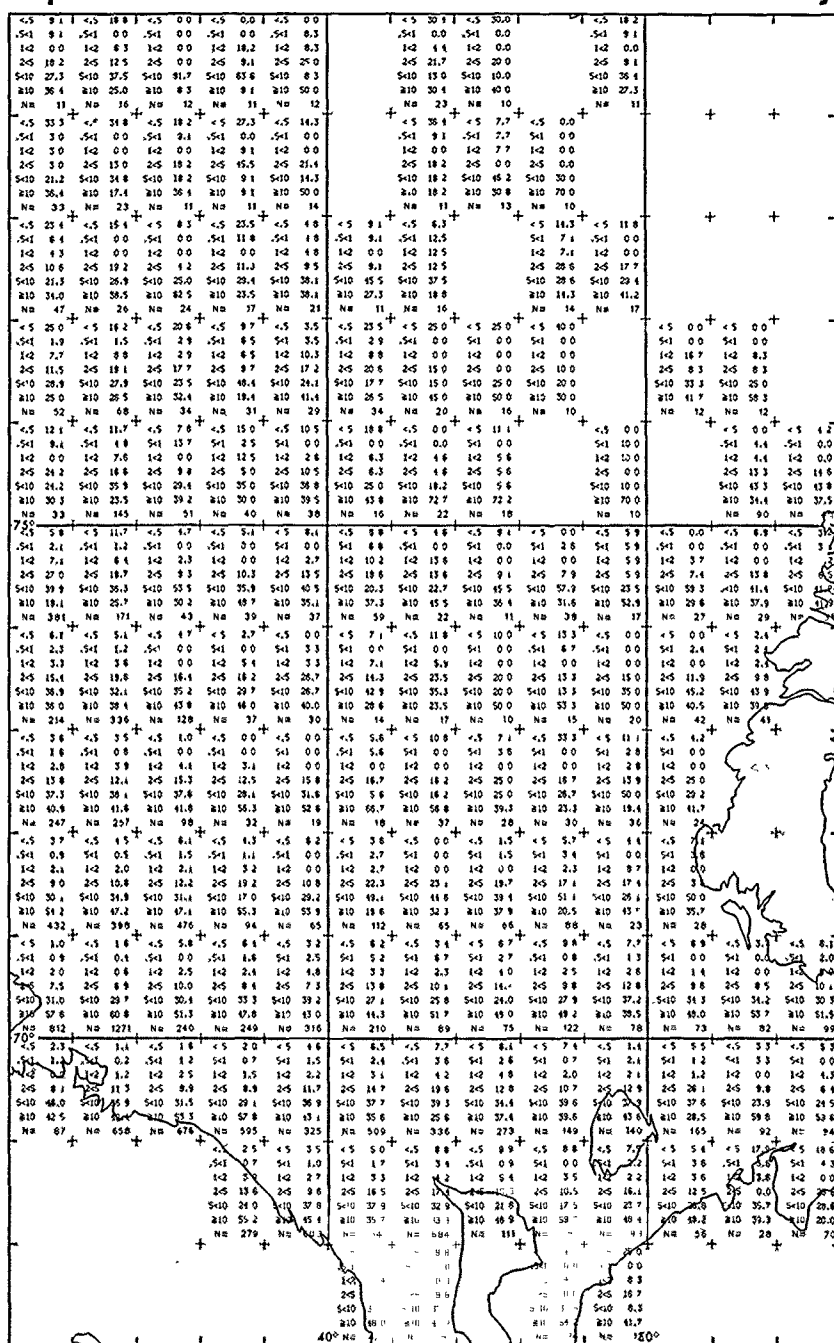
September

Visibility



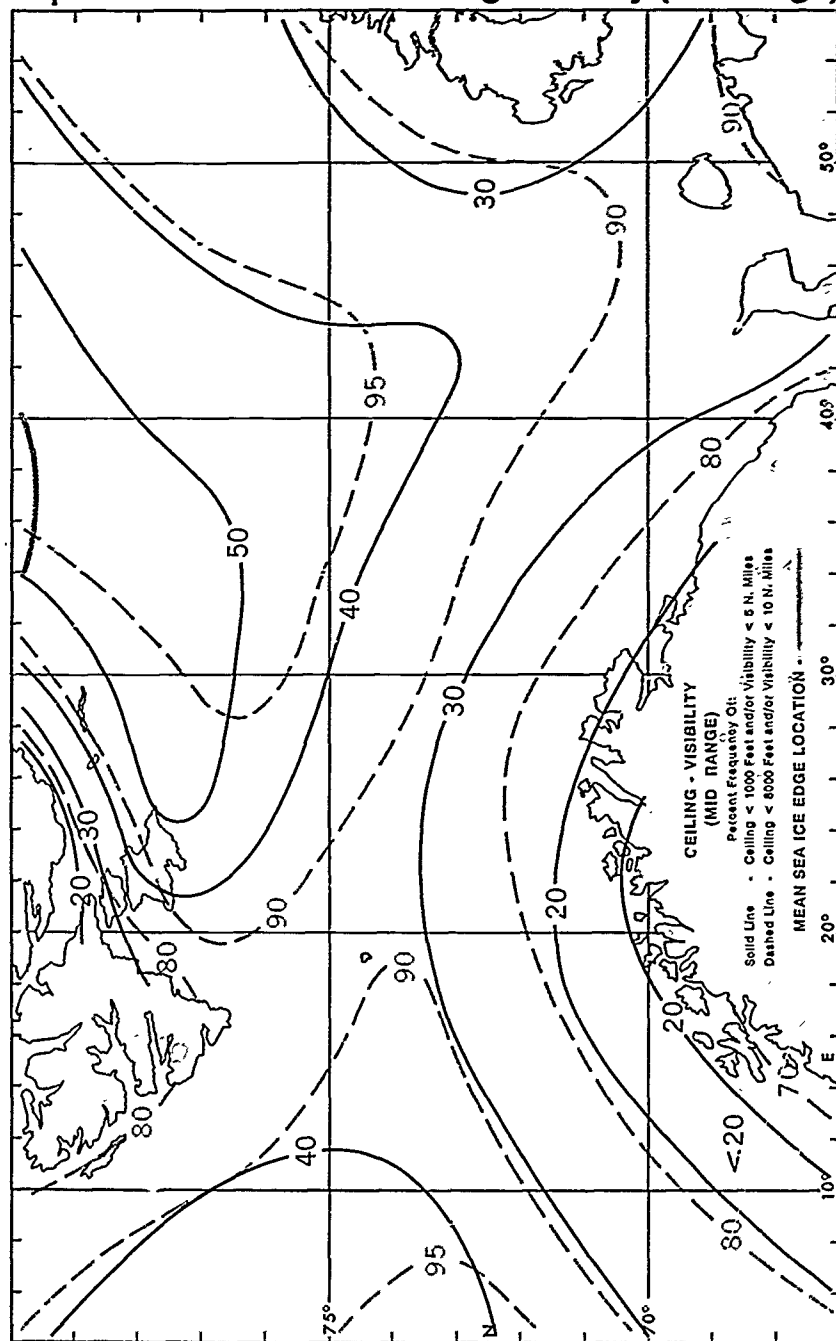
September

Visibility



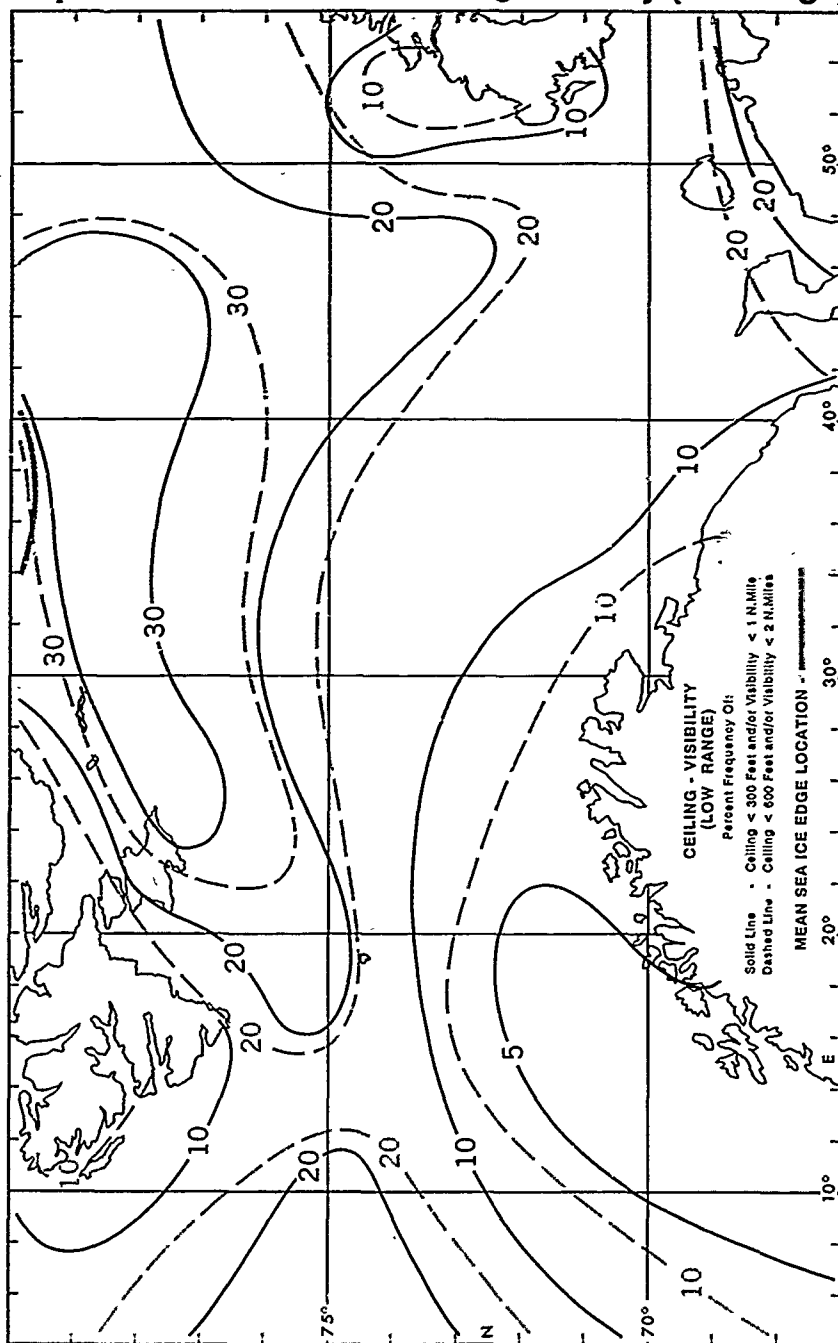
September

Ceiling-Visibility (mid range)



September

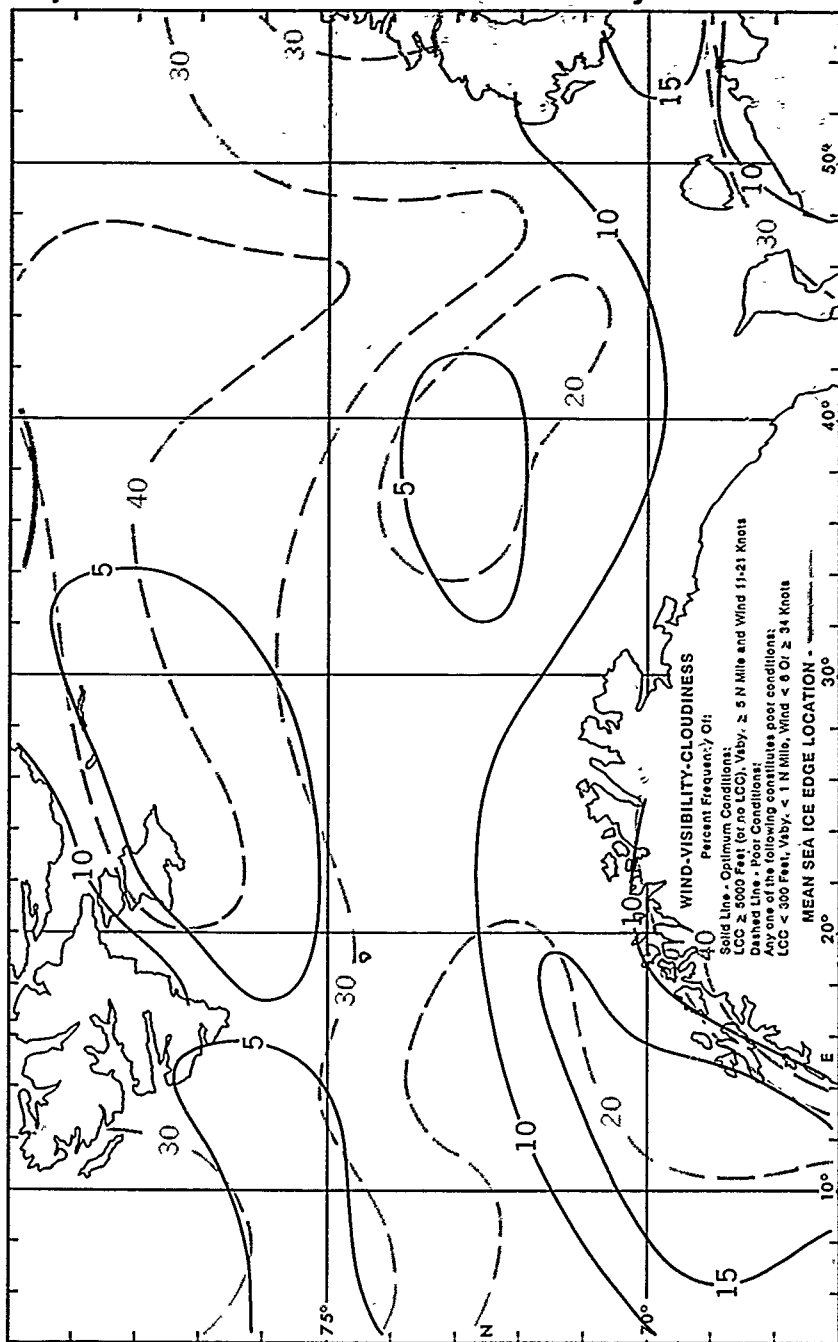
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

September

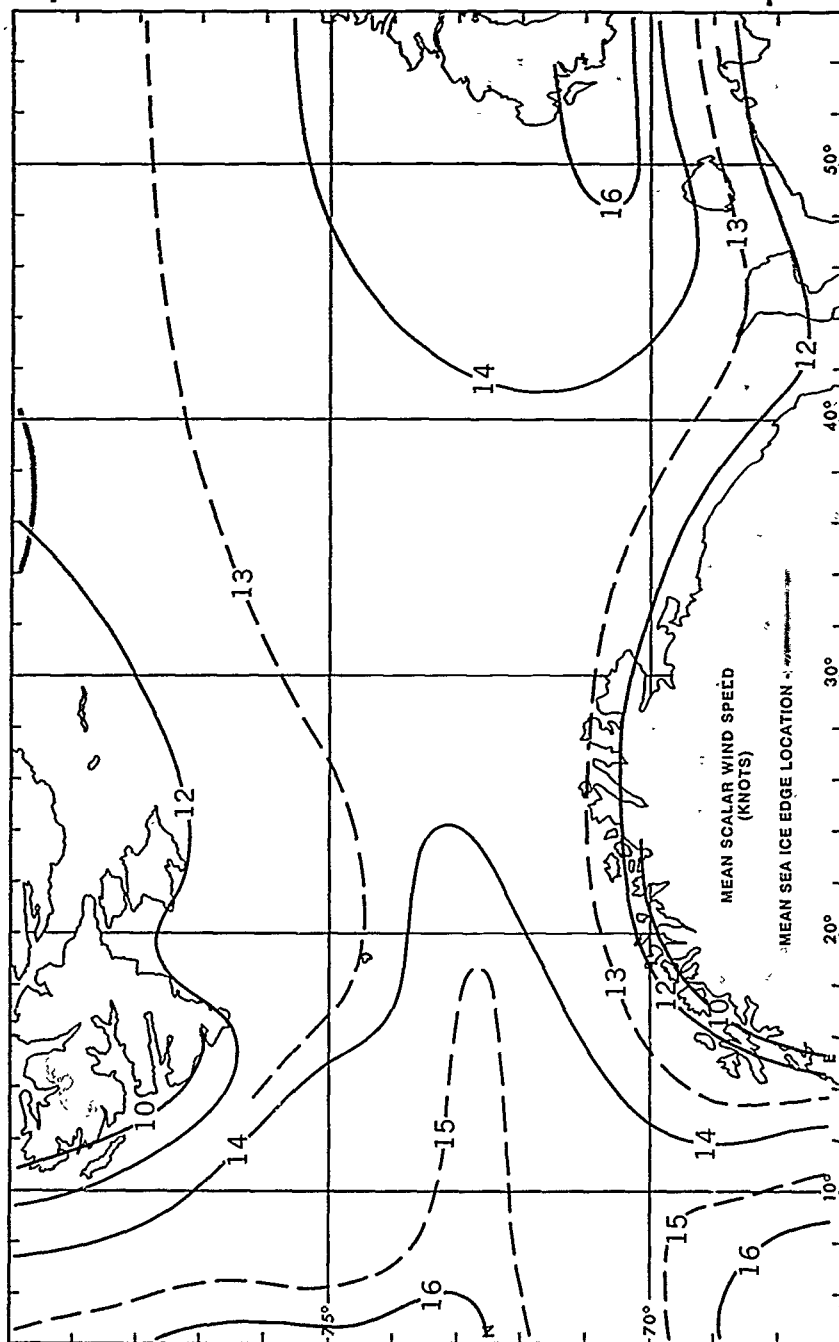
Wind-Visibility-Cloudiness



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

September

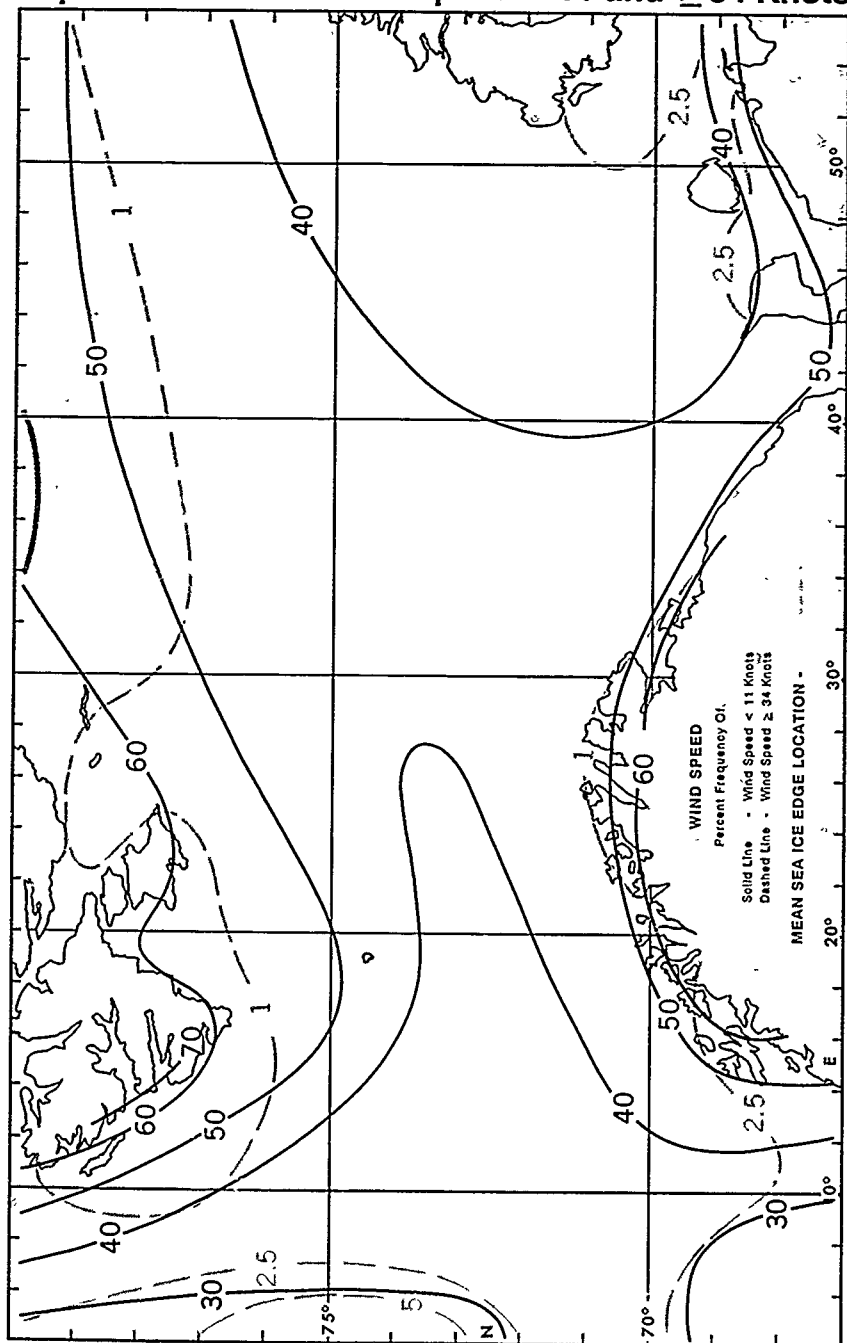
Mean Scalar Wind Speed



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

September

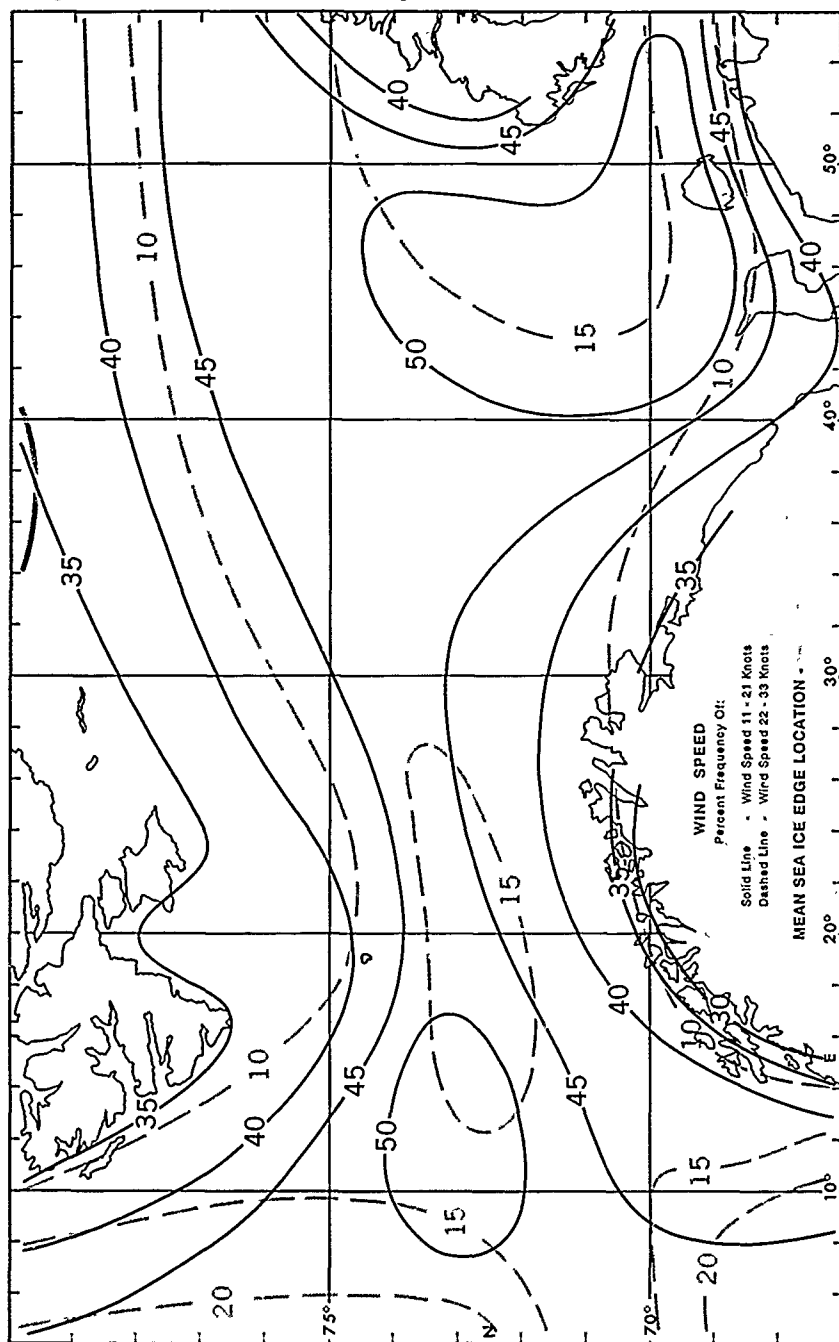
Wind Speed < 11 and ≥ 34 Knots



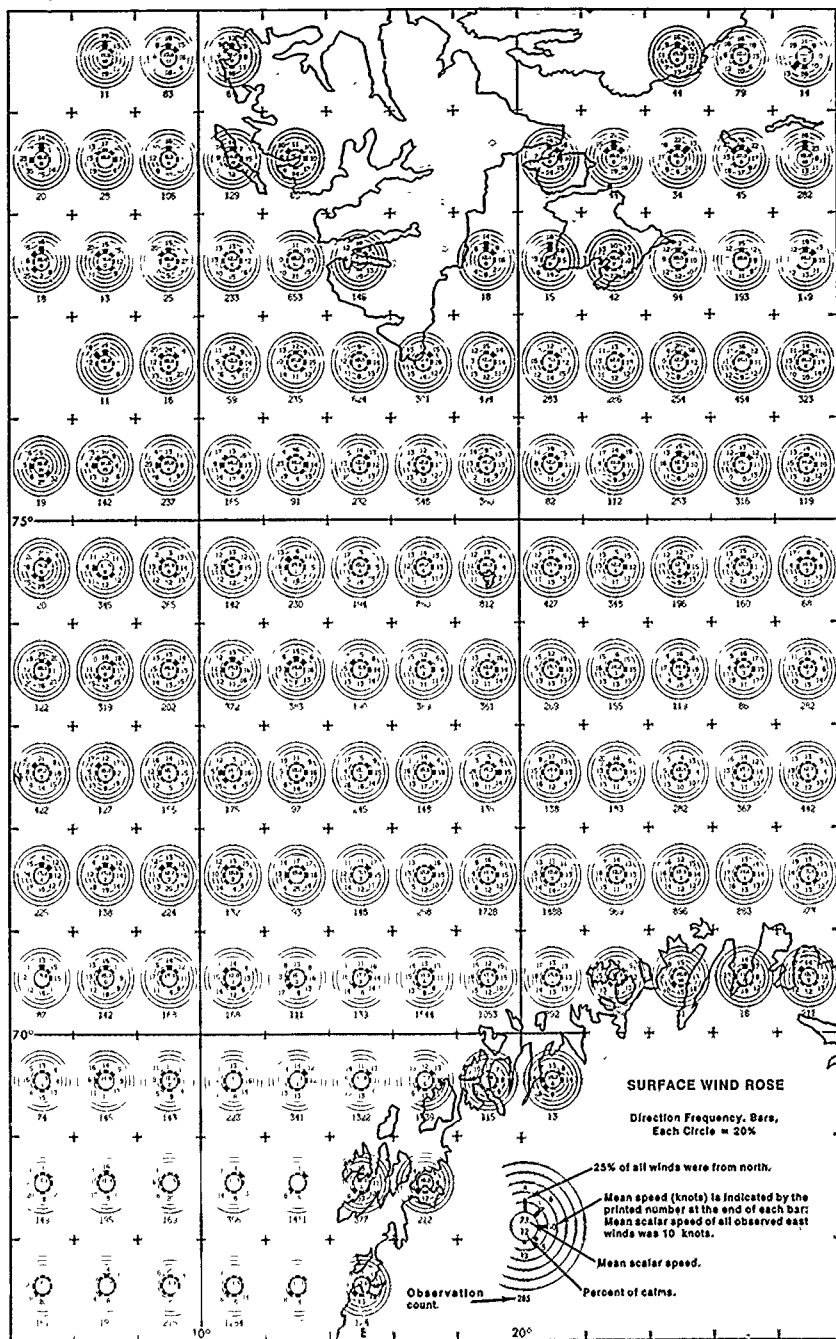
NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

September

Wind Speed 11-21 and 22-33 Knots

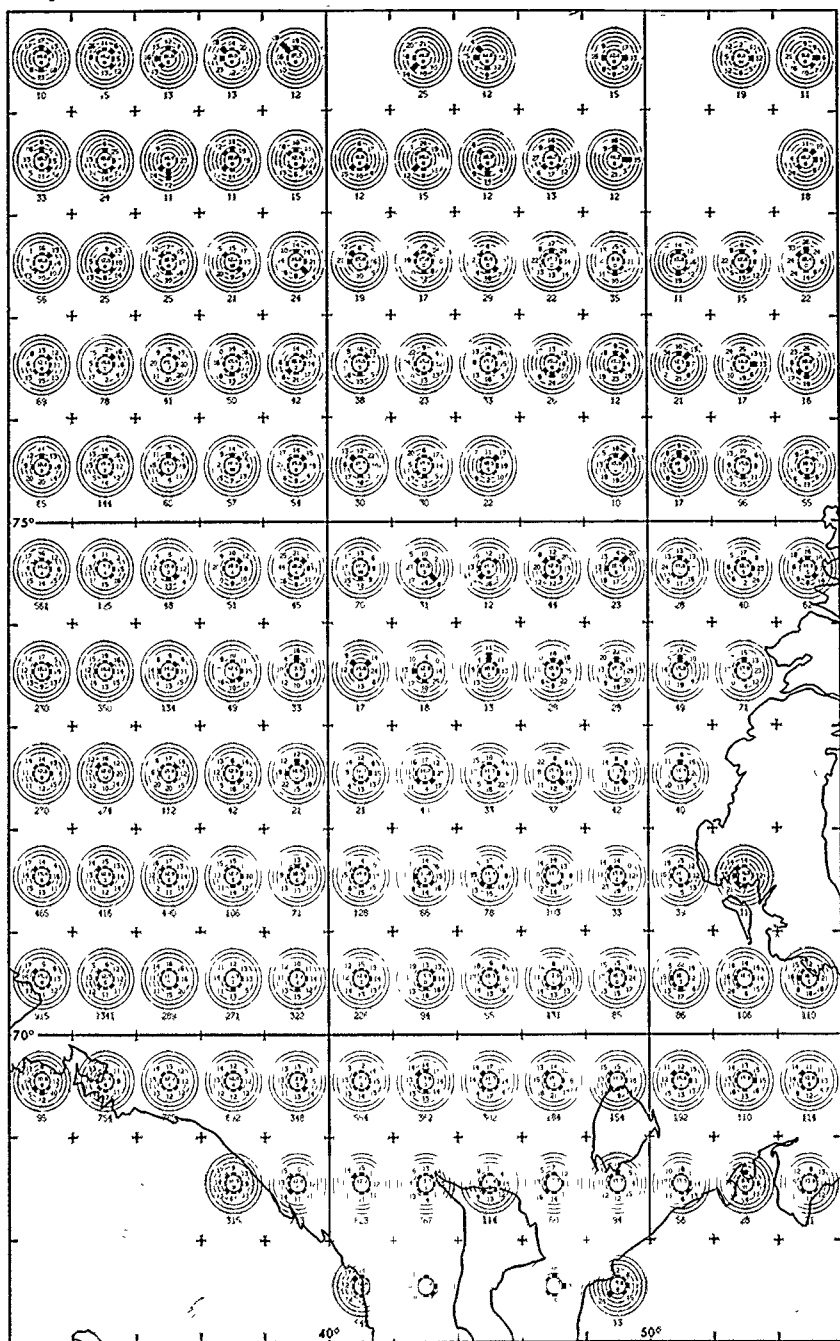


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



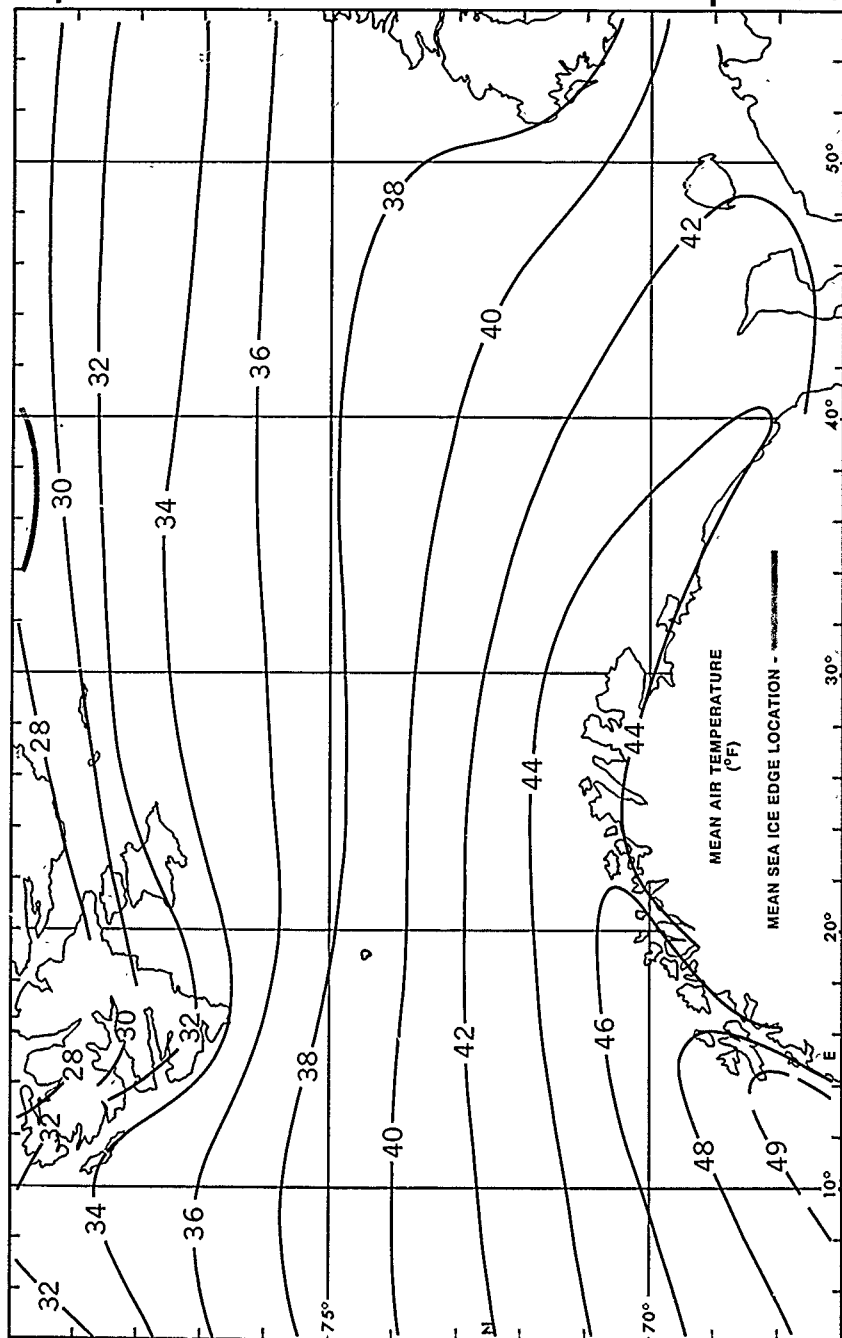
September

Surface Wind Roses



September

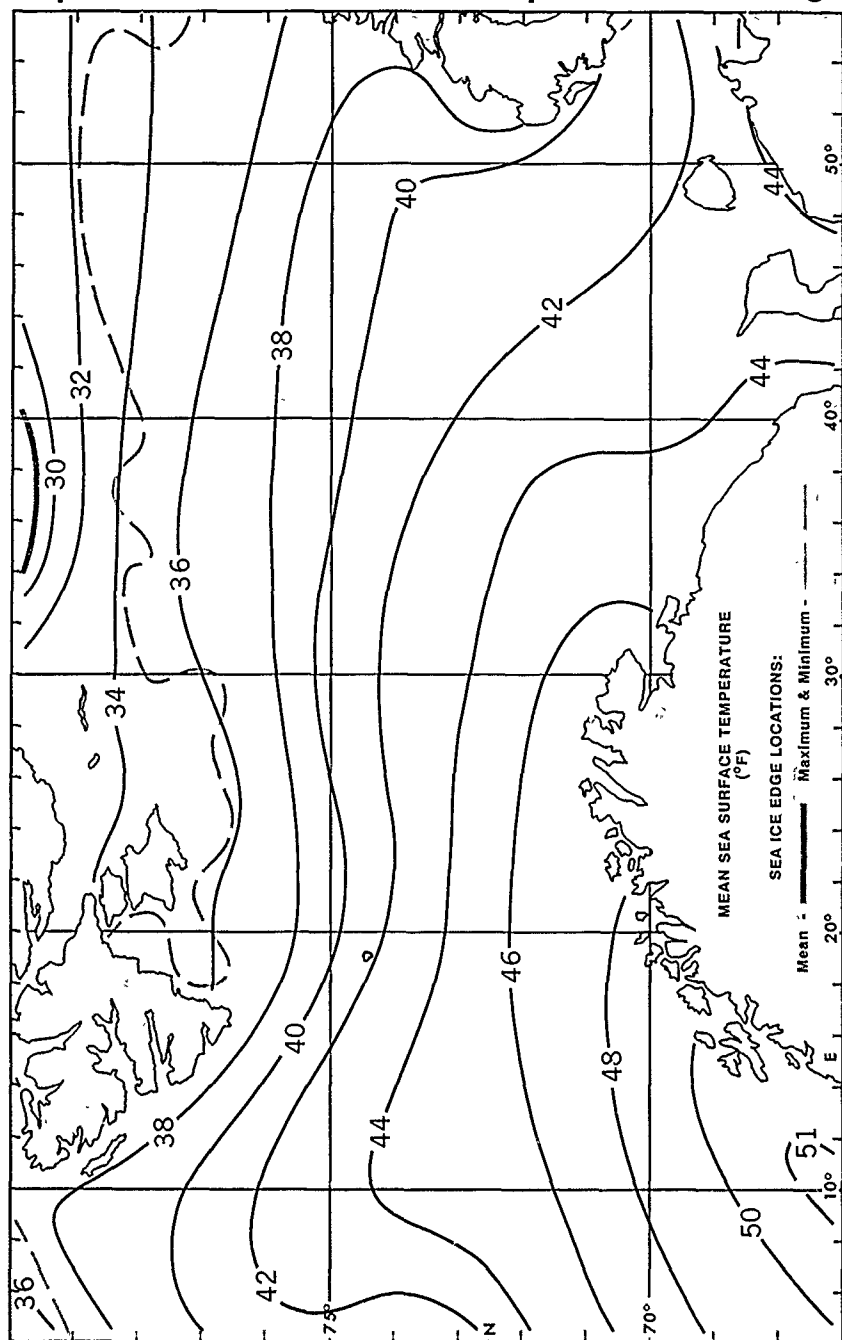
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

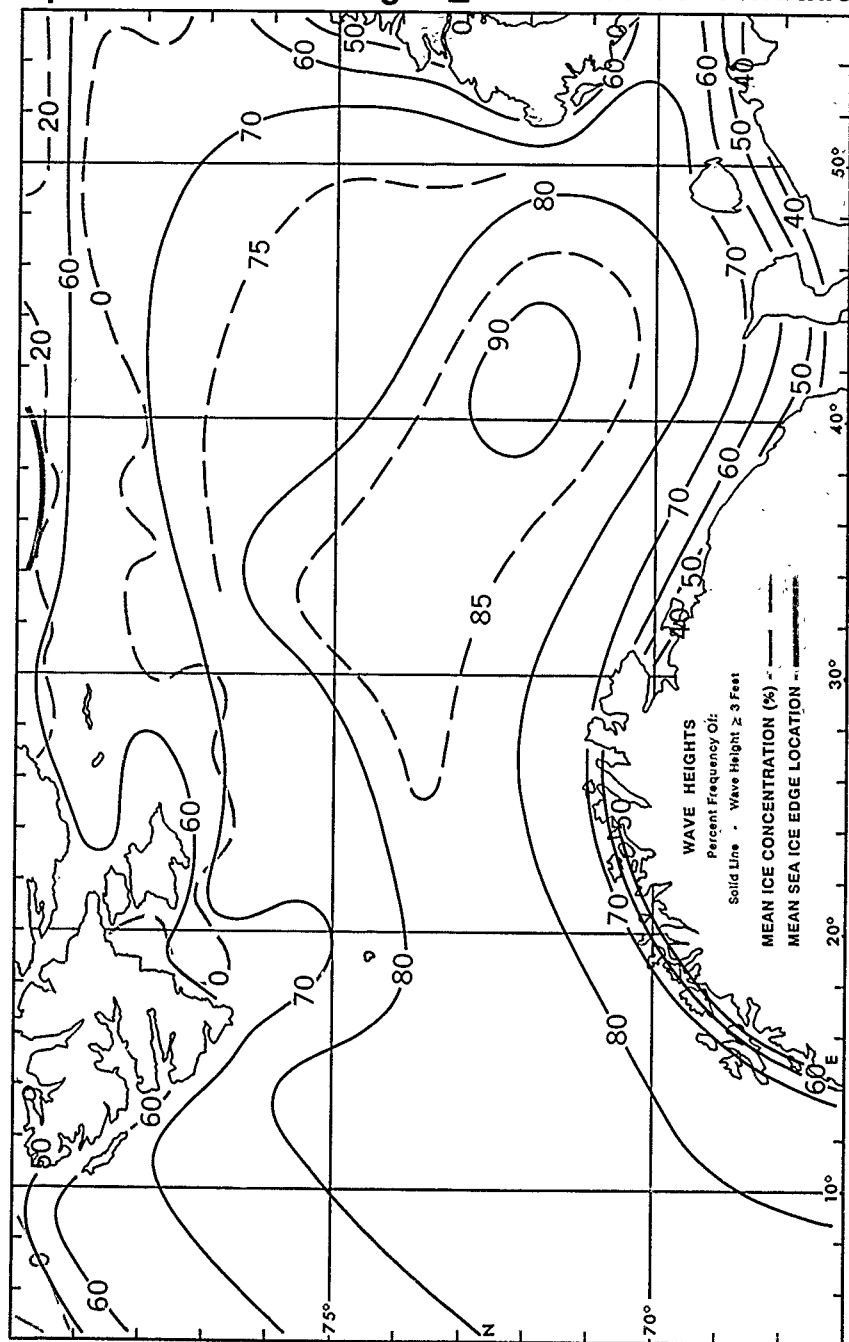
September

Mean Sea Temperature & Ice Edge



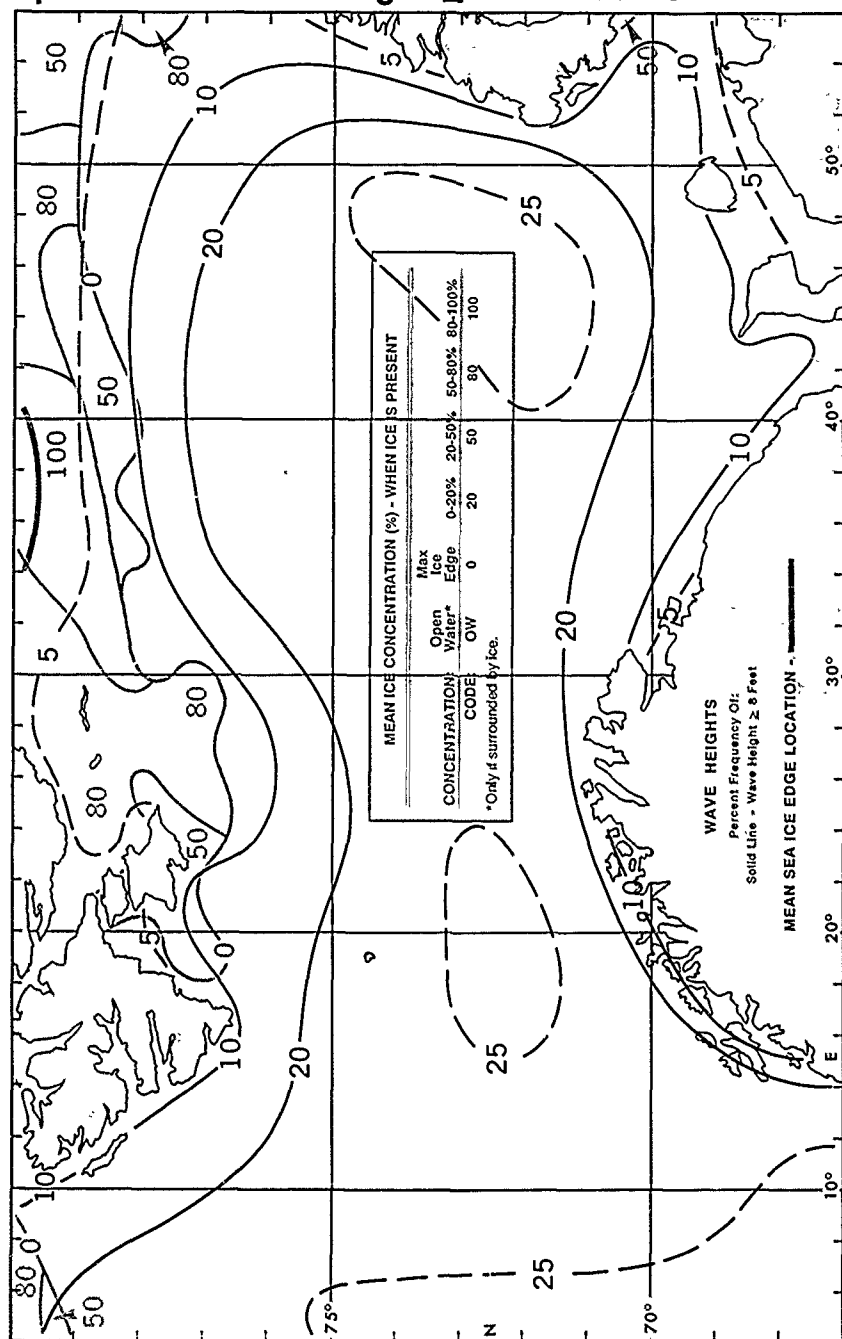
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

September Wave Height ≥ 3 Ft. & Ice Concentration

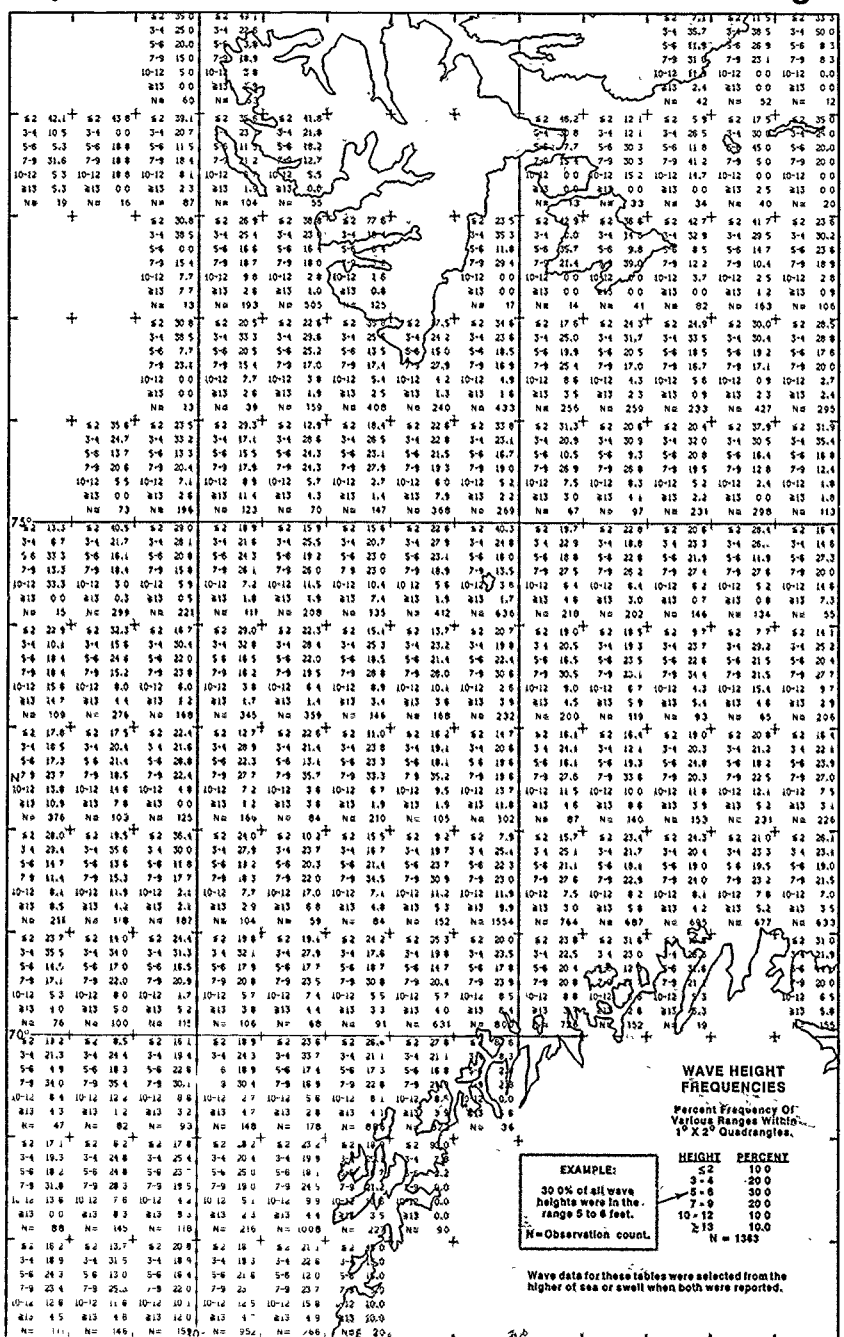


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

September Wave Height ≥ 8 Ft. & Ice Concentration

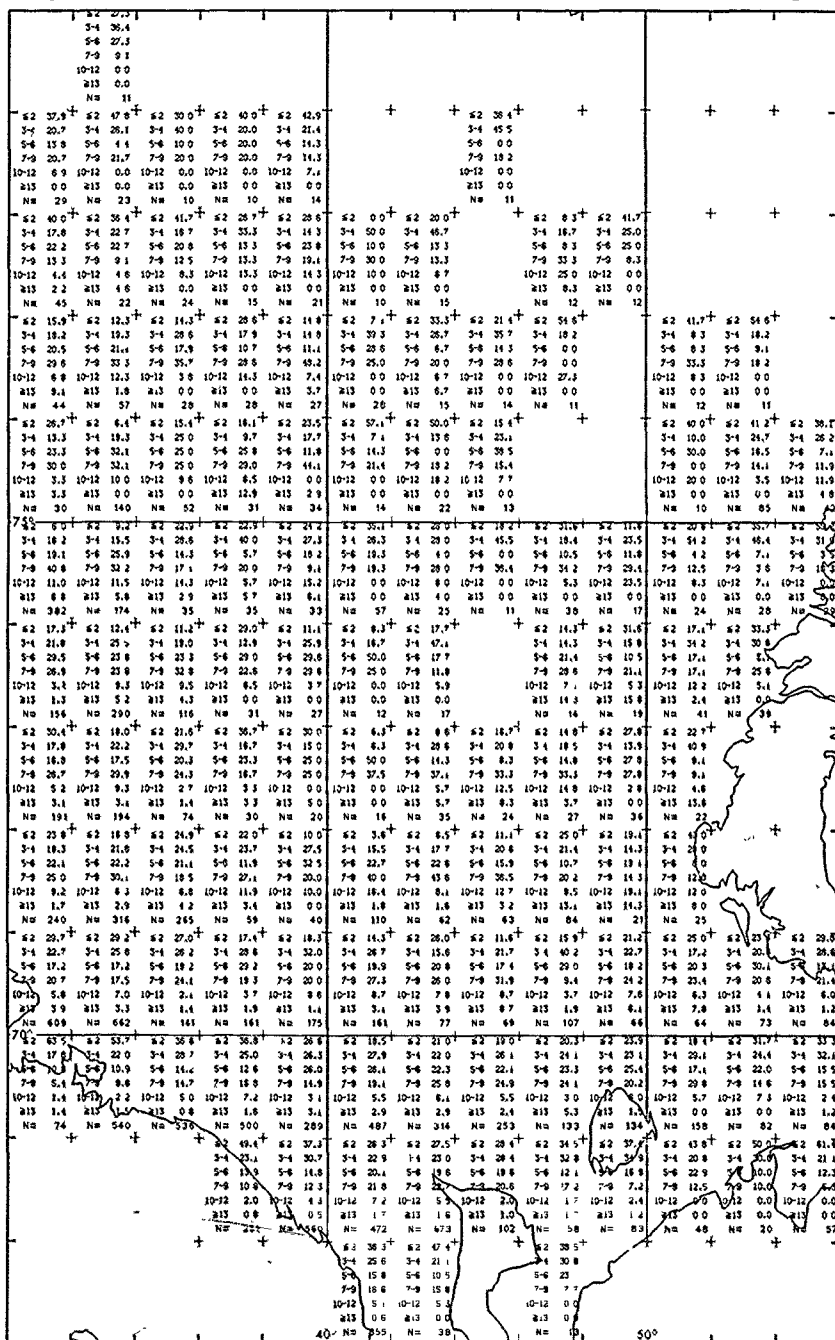


NOTE - Analysis beyond the mean ice edge is highly subjective due to low observation counts



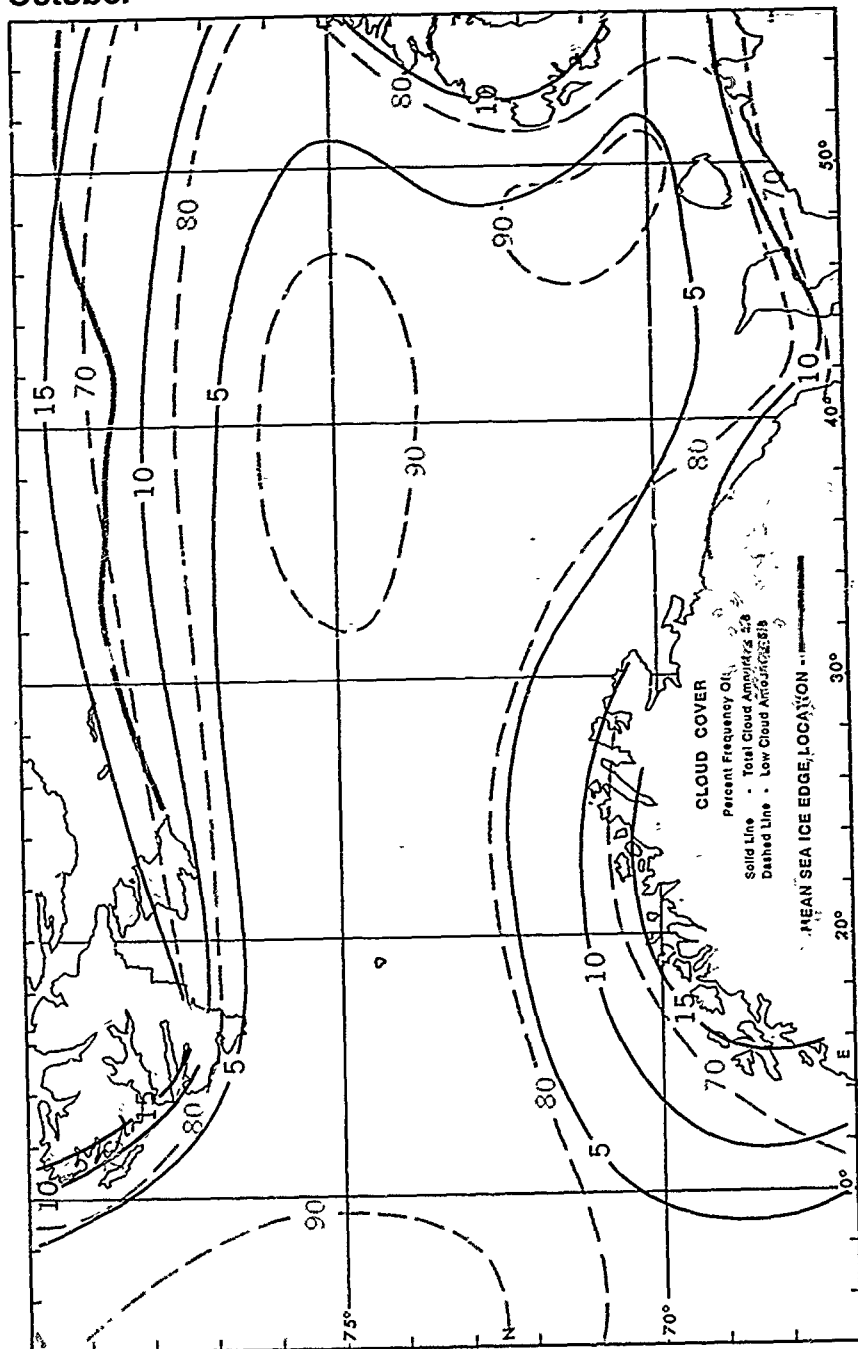
September

Wave Height



October

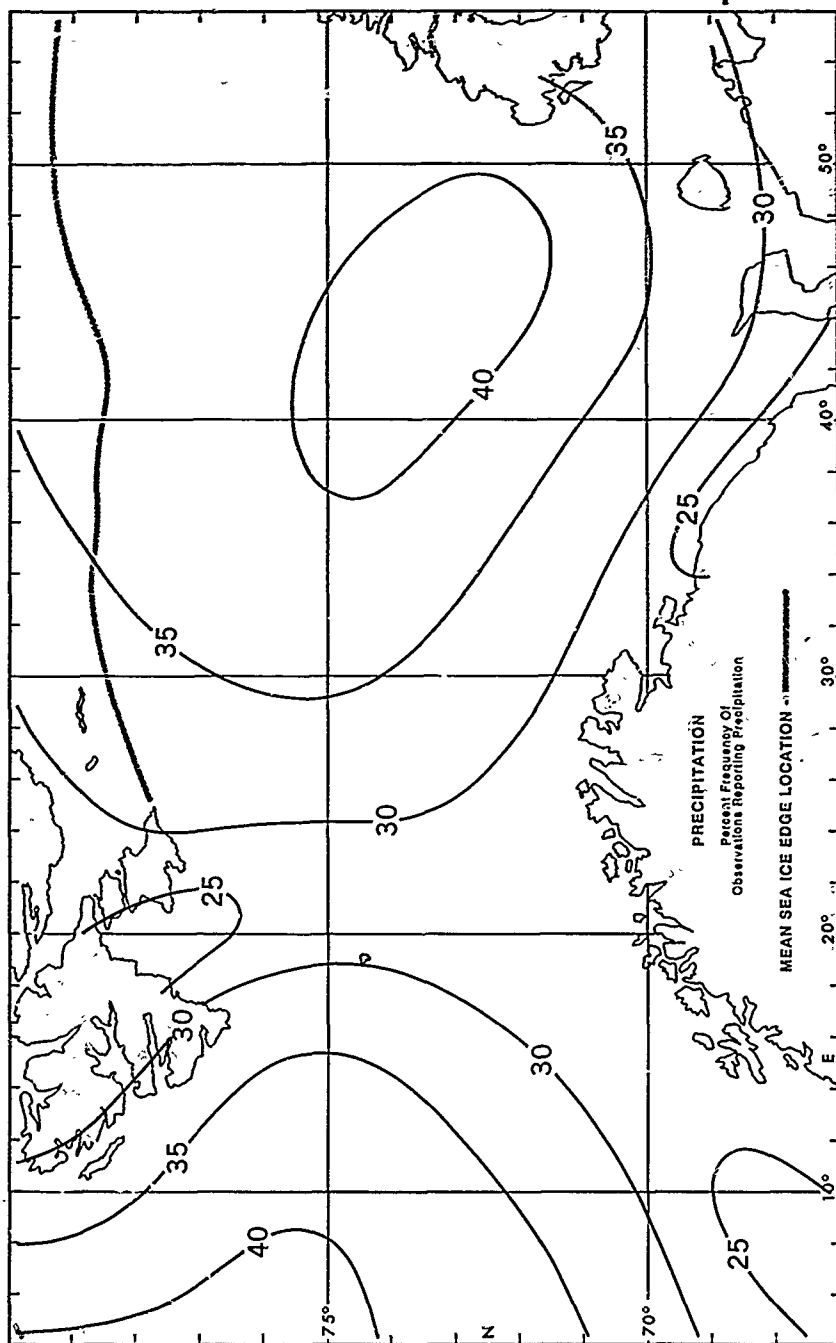
Clouds



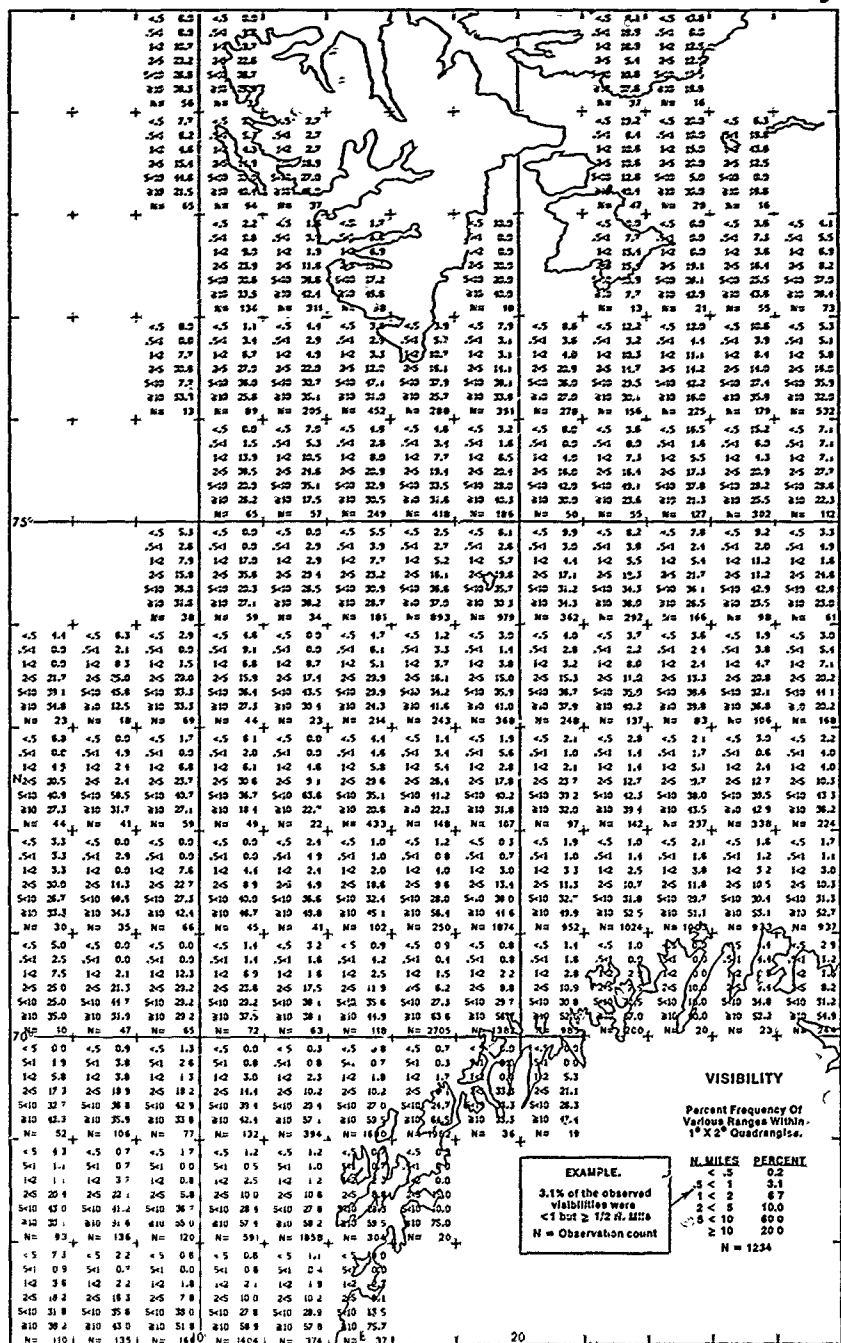
NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

October

Precipitation

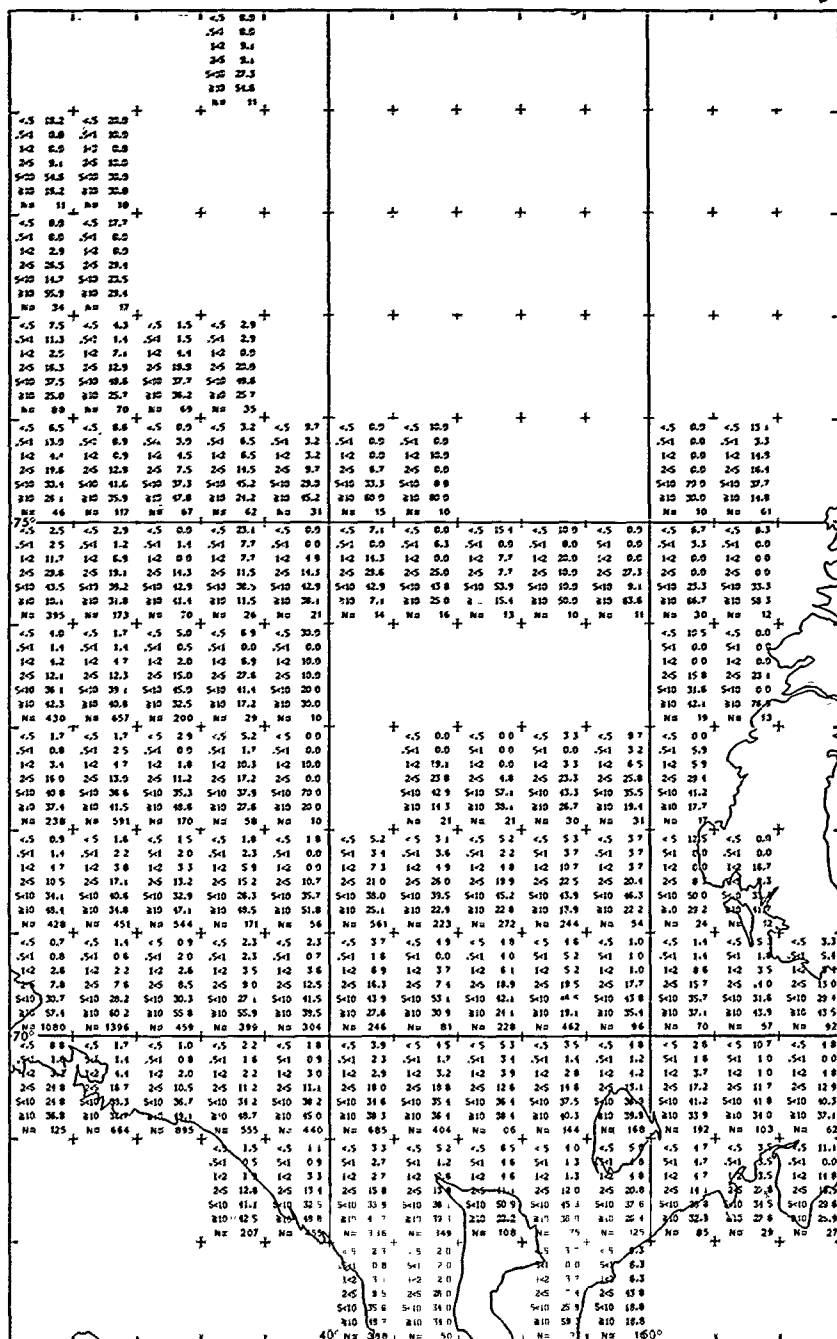


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.



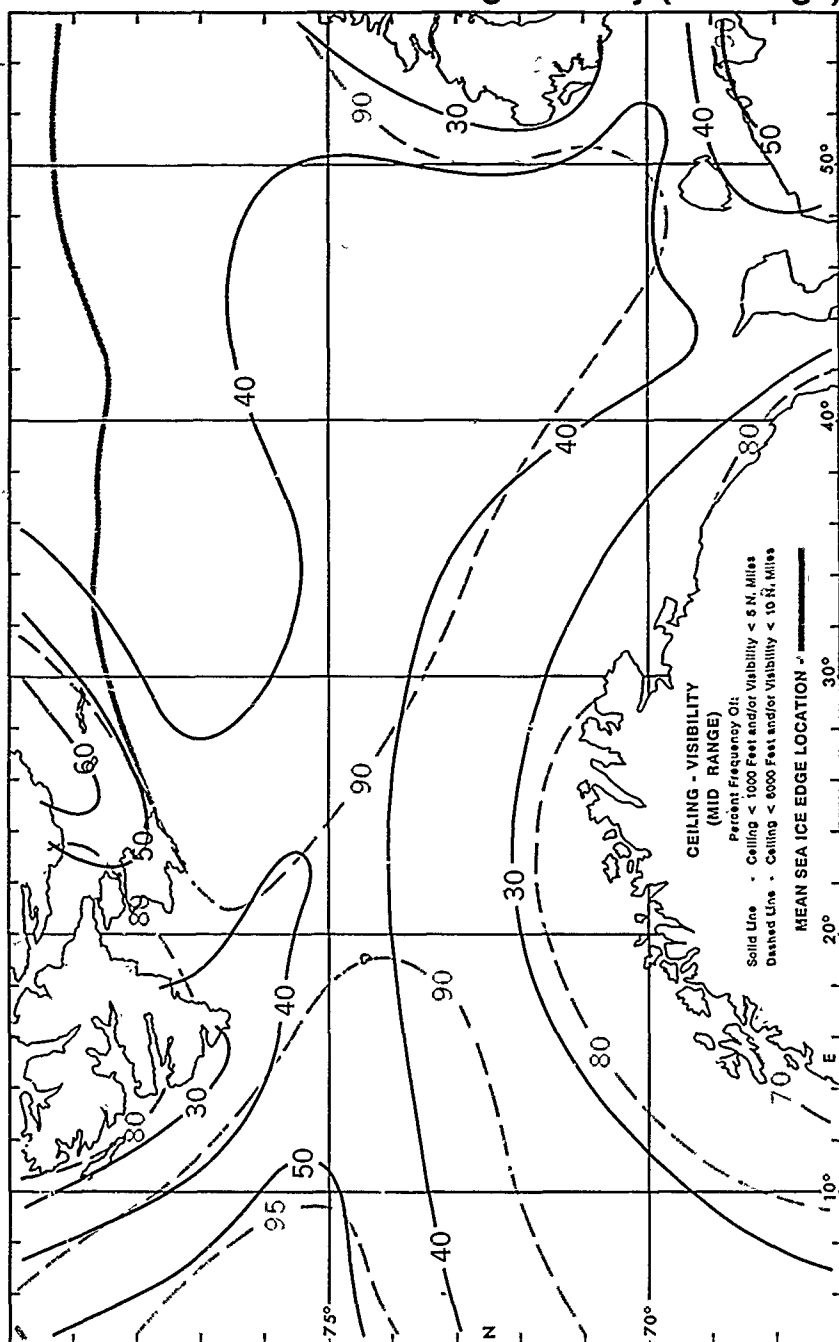
October

Visibility



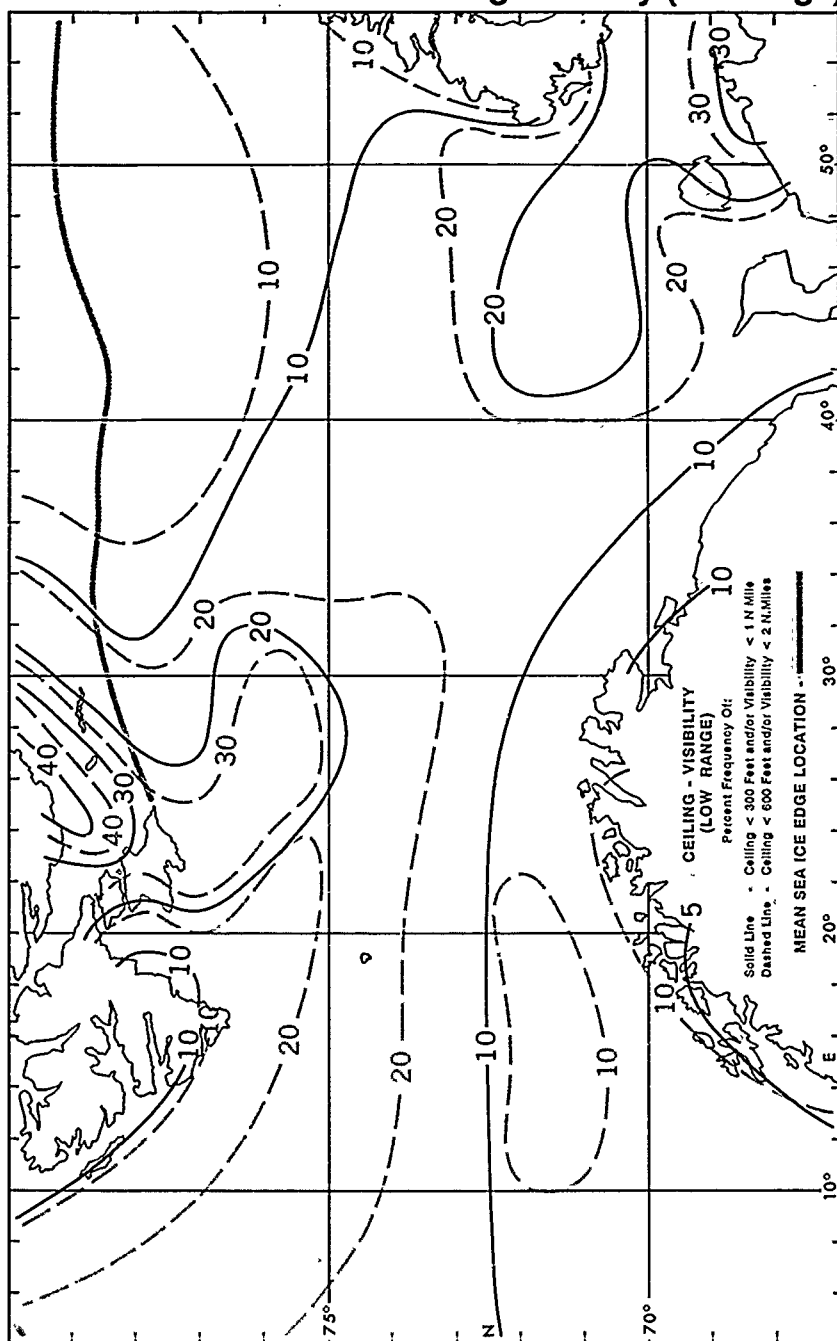
October

Ceiling-Visibility (mid range)



October

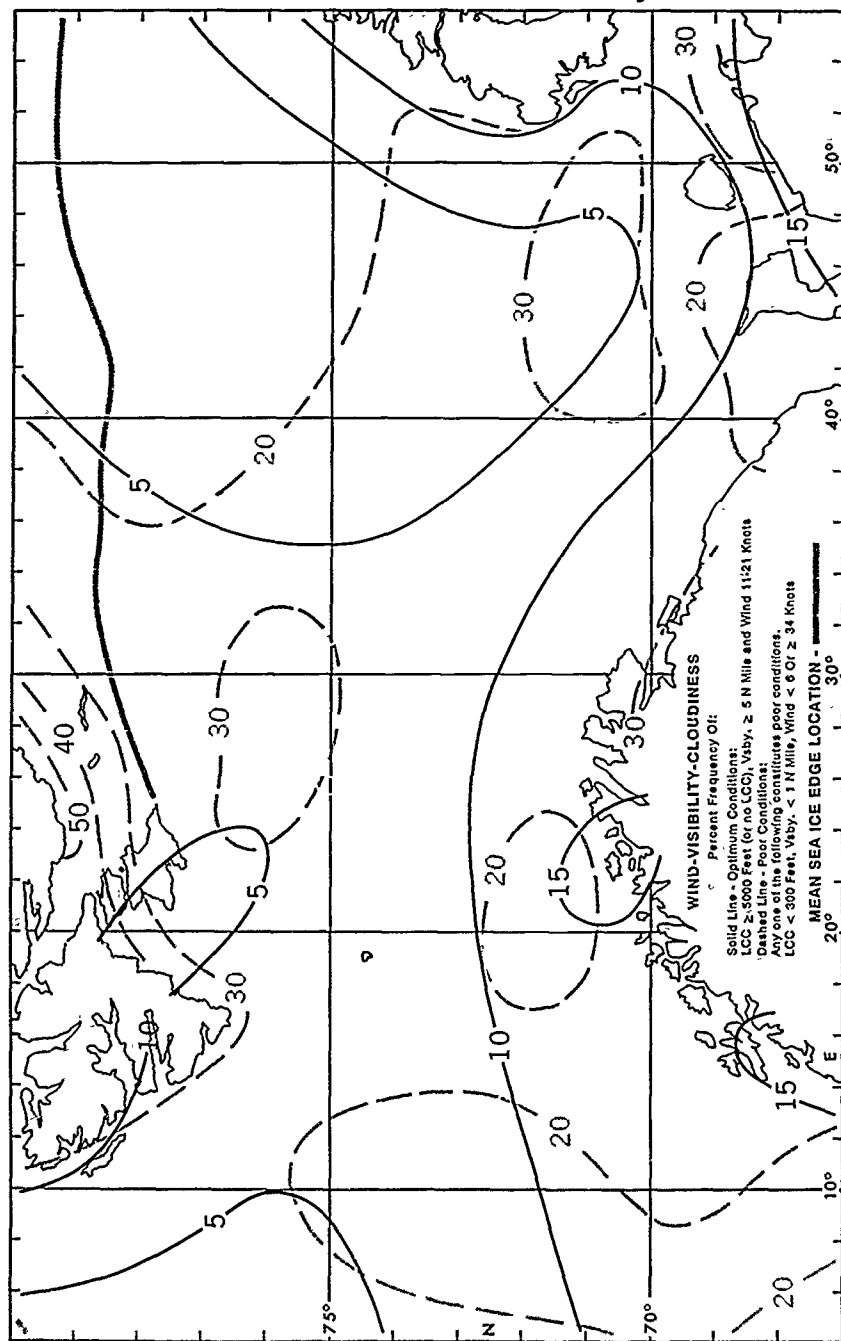
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

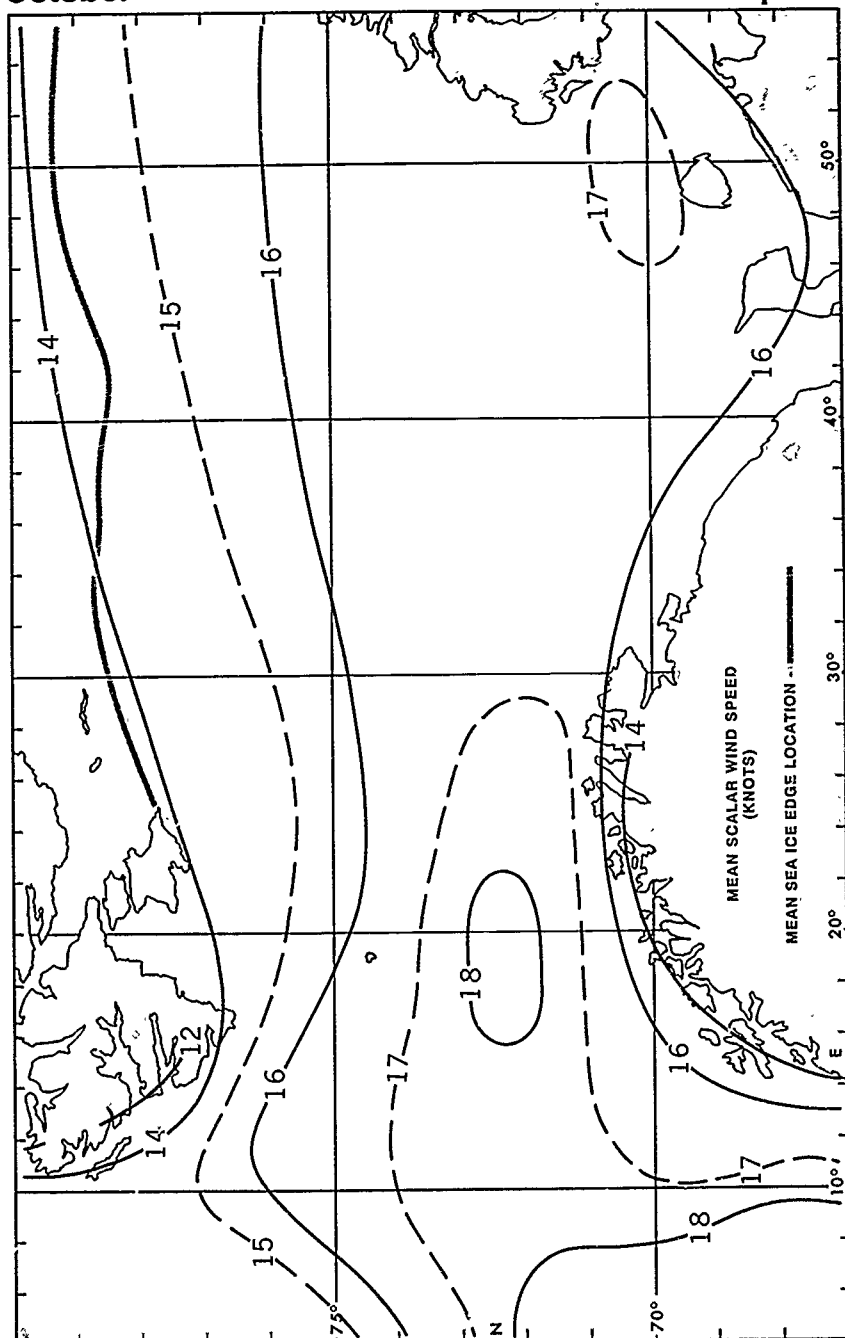
Wind-Visibility-Cloudiness



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

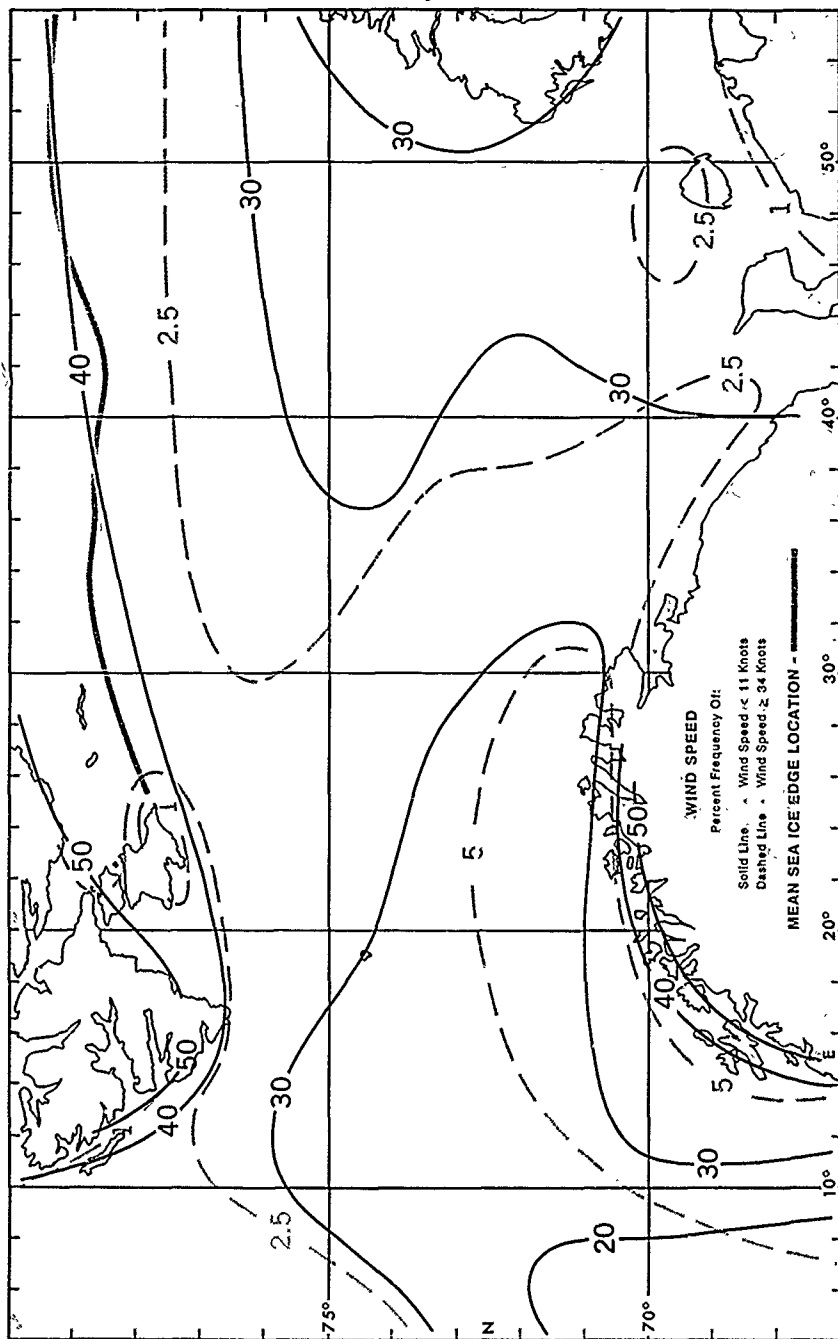
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

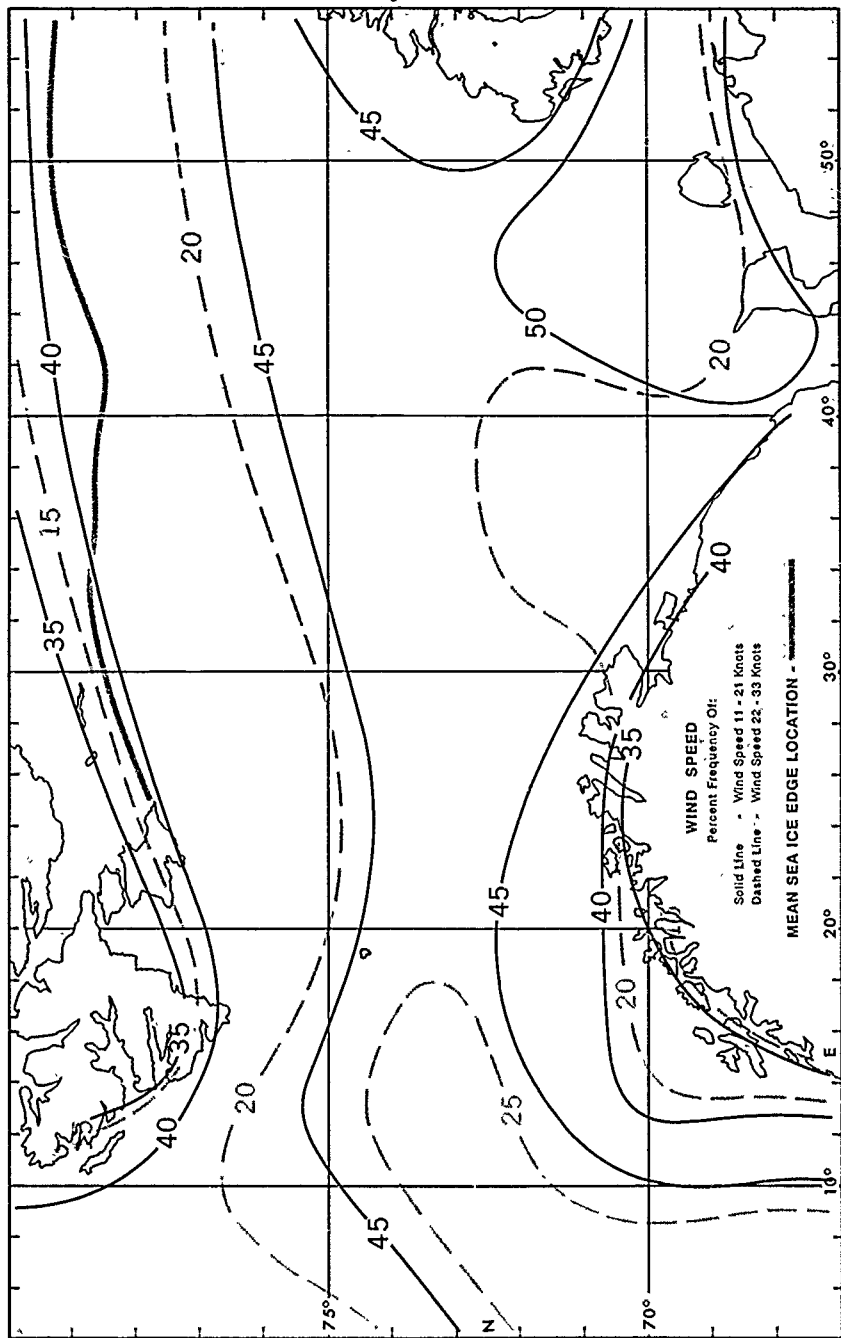
Wind Speed < 11 and ≥ 34 Knots



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

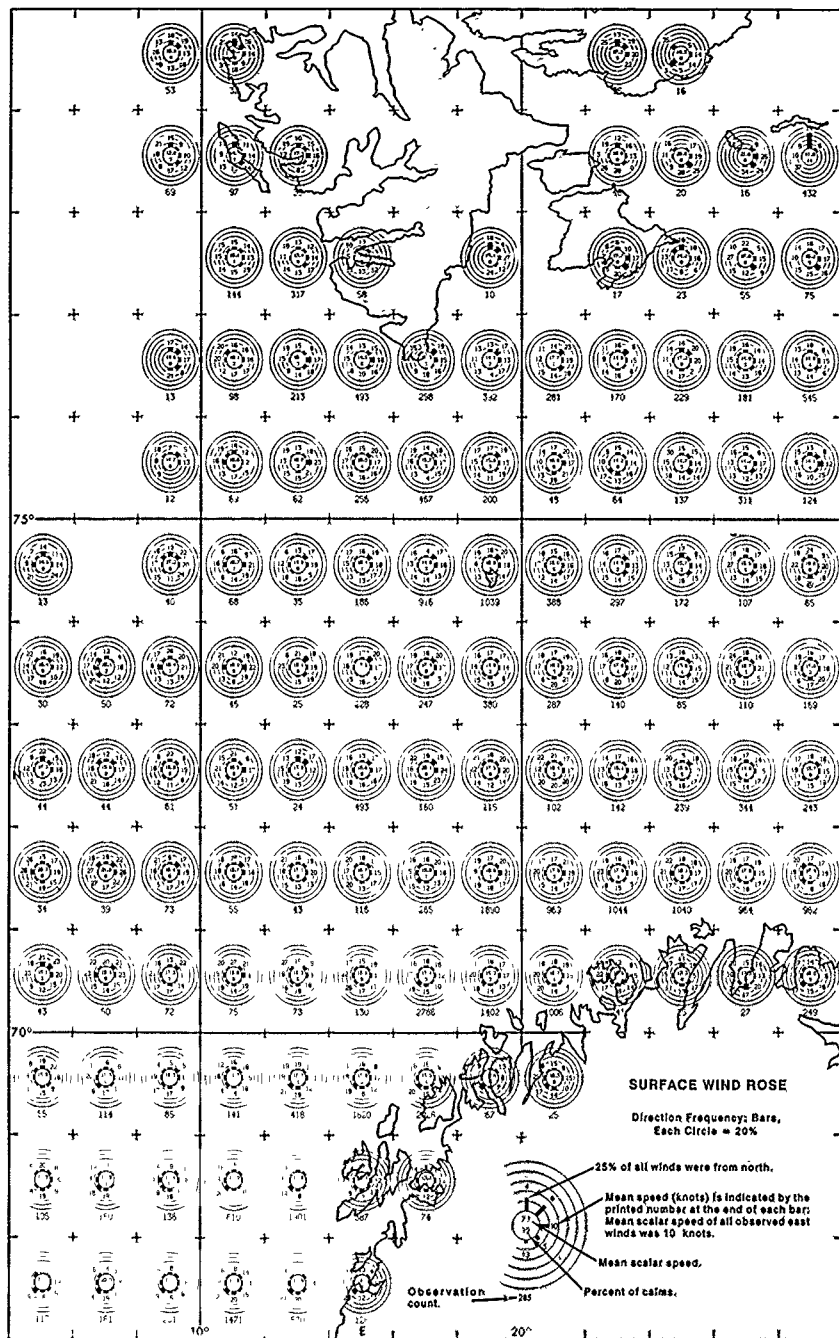
Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

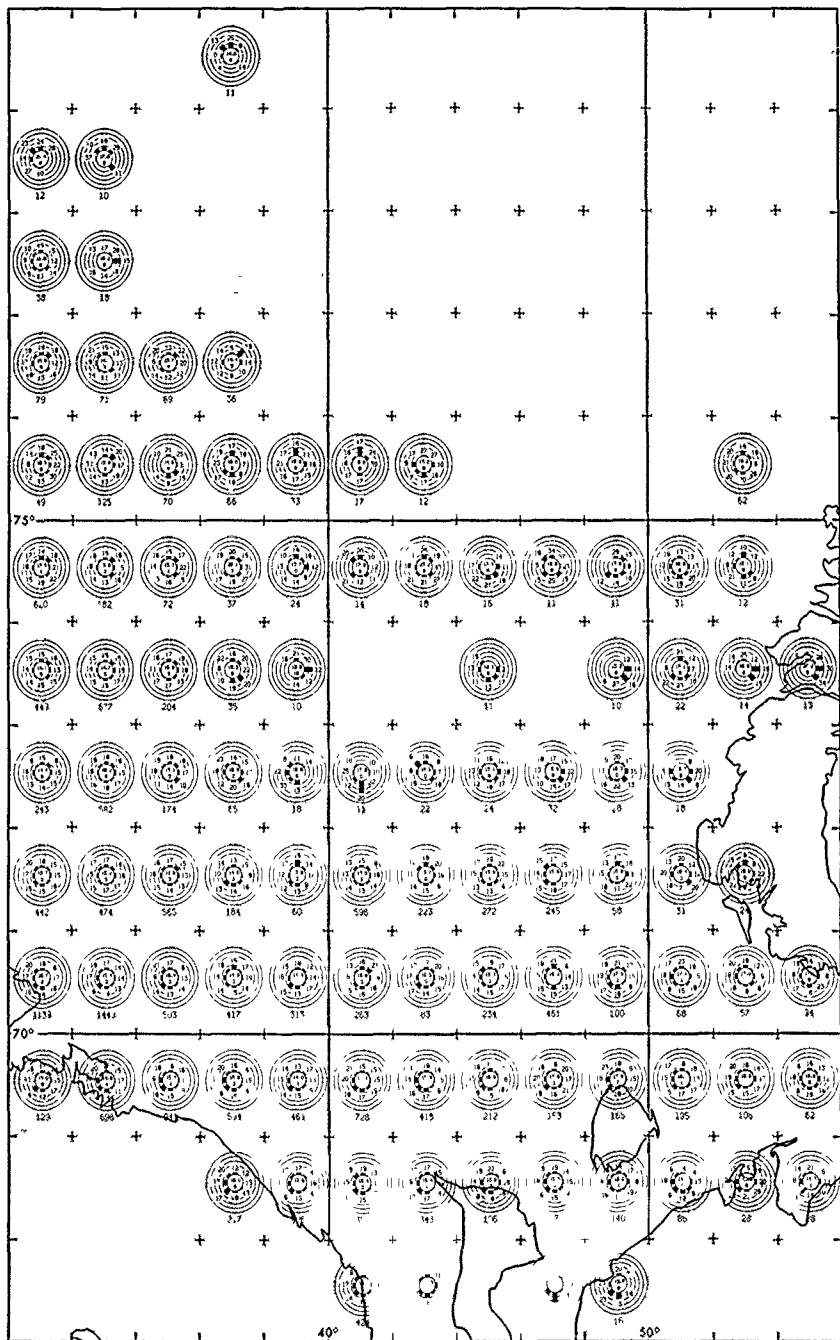
October

Surface Wind Roses



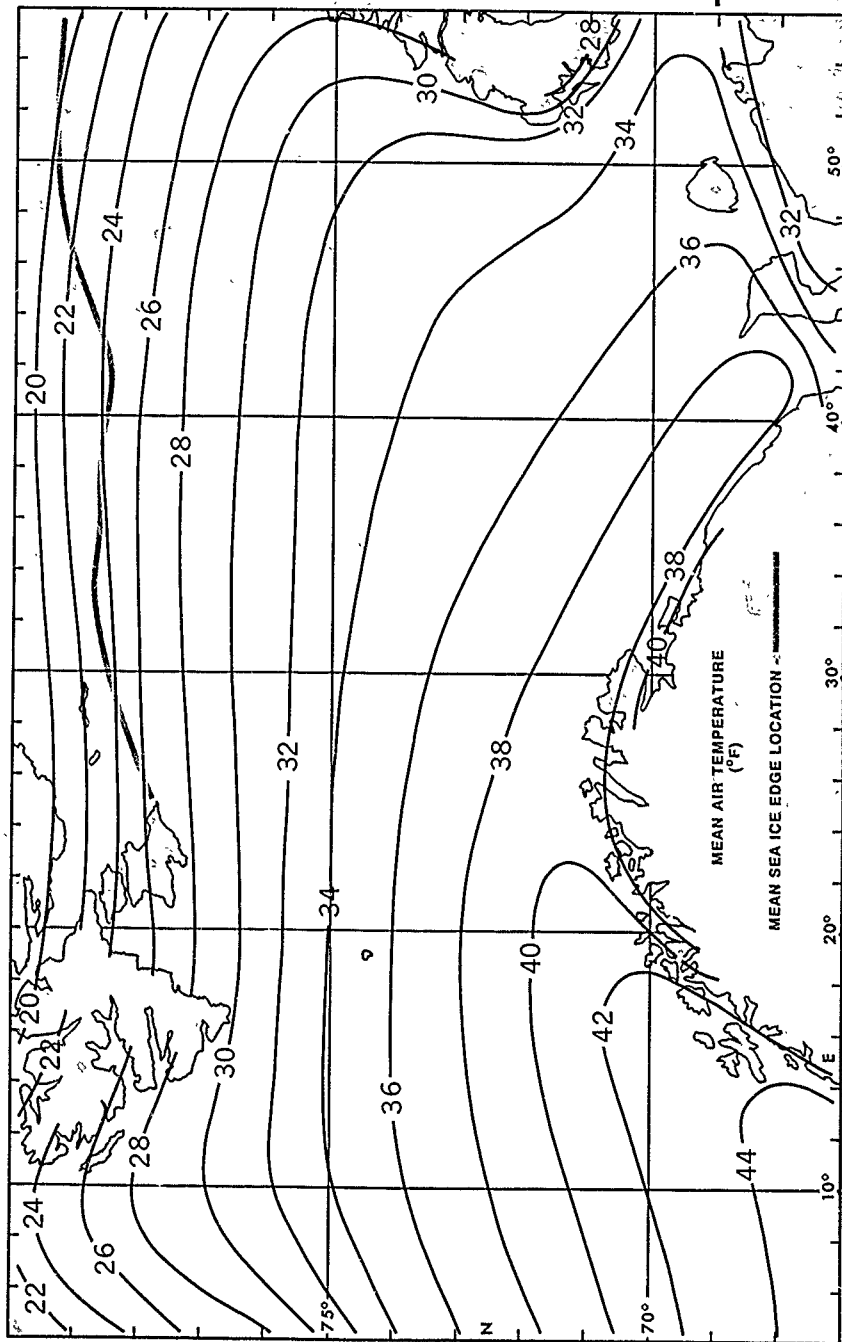
October

Surface Wind Roses



October

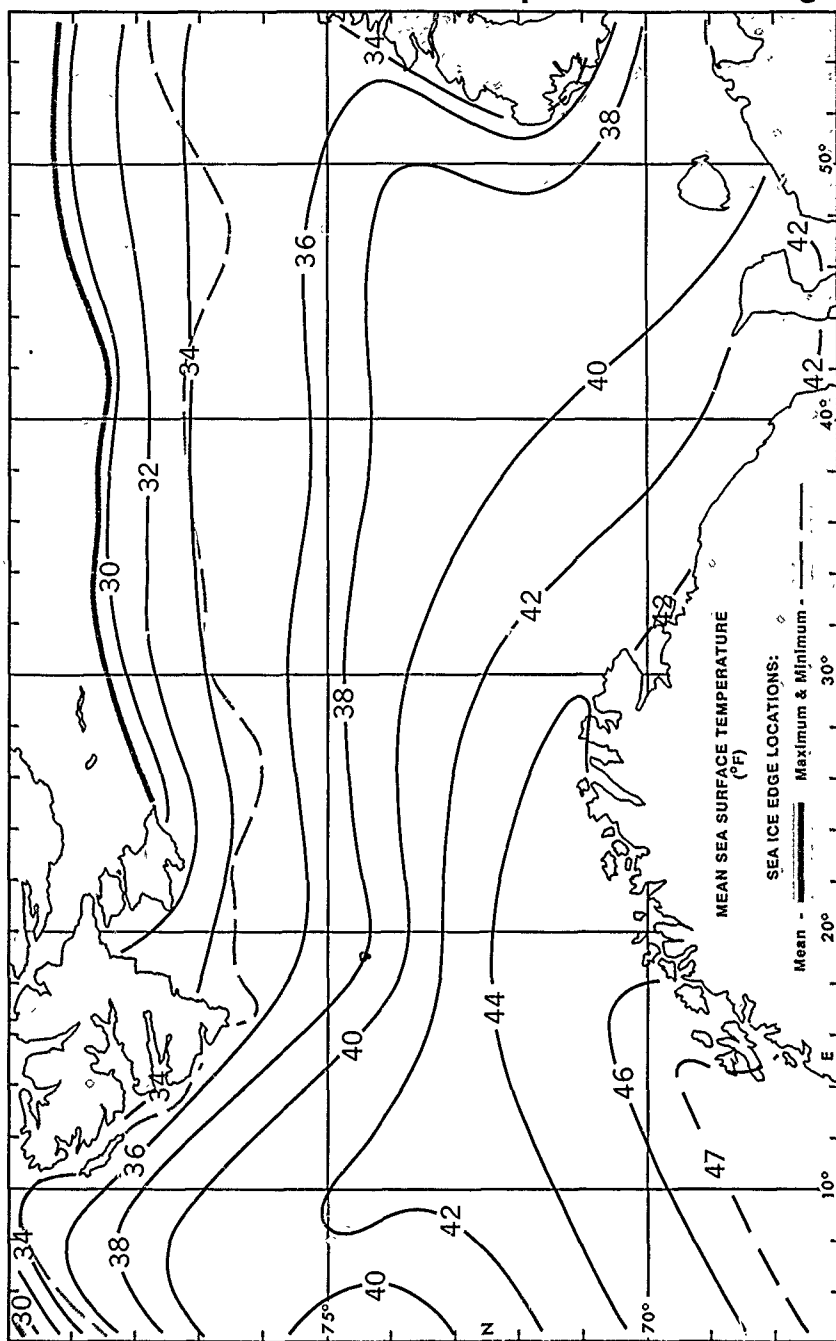
Mean Air Temperature



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

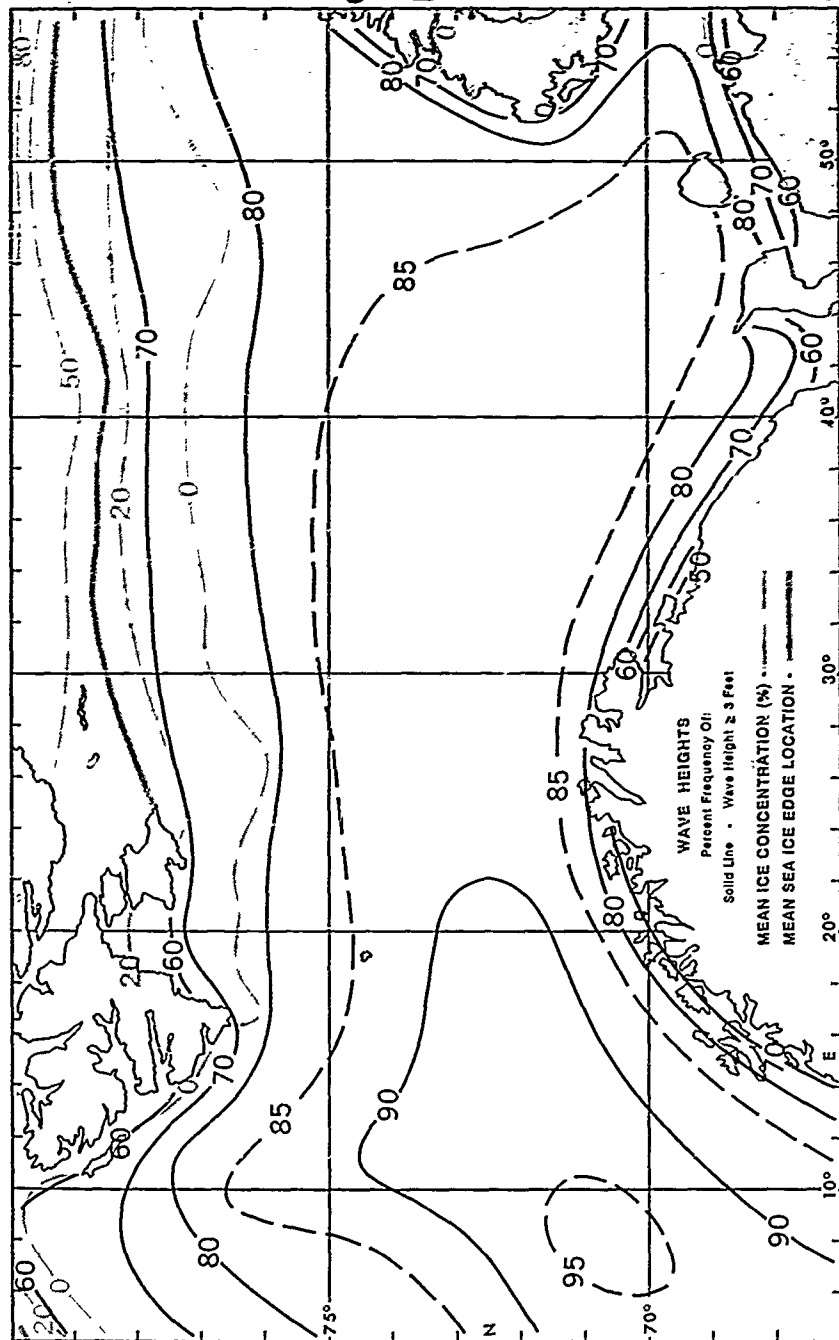
October

Mean Sea Temperature & Ice Edge



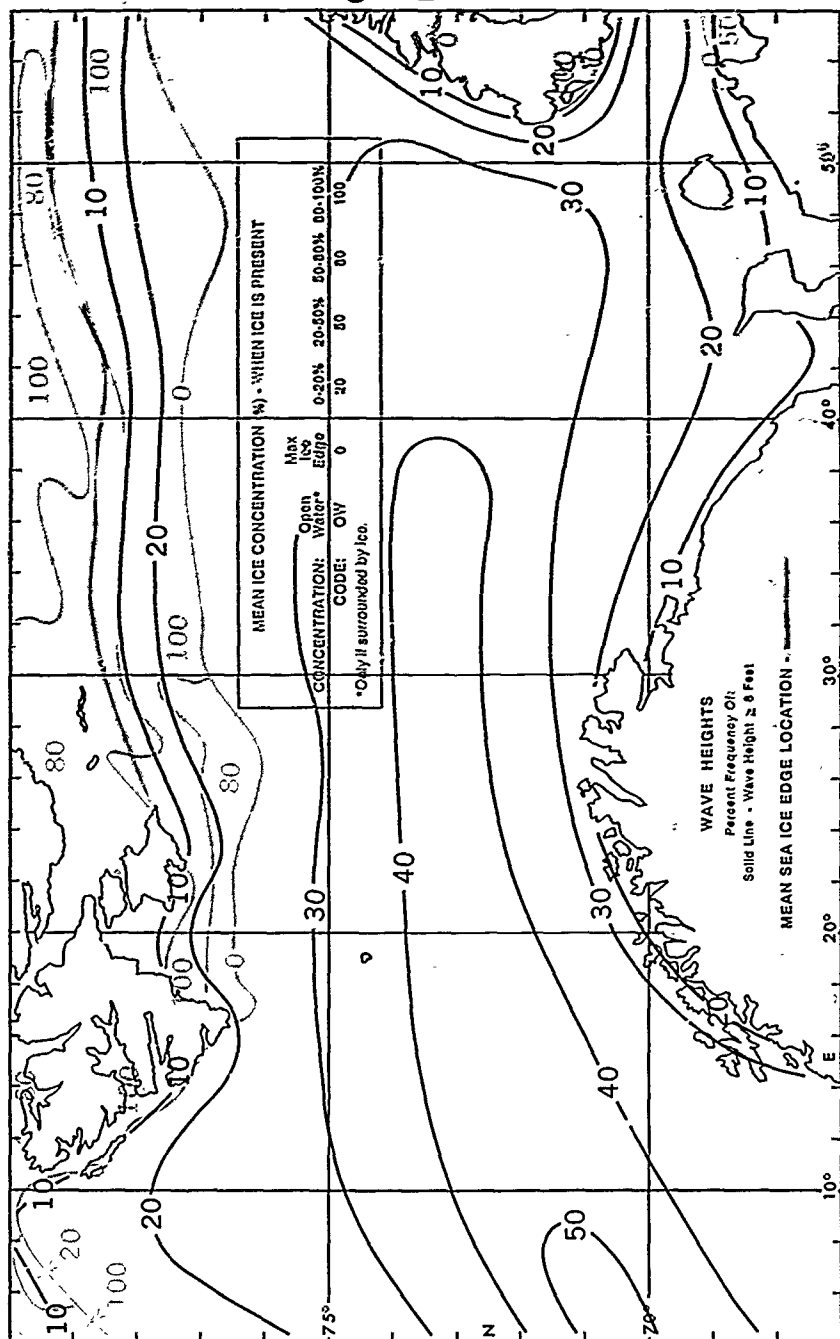
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

October Wave Height ≥ 3 Ft. & Ice Concentration



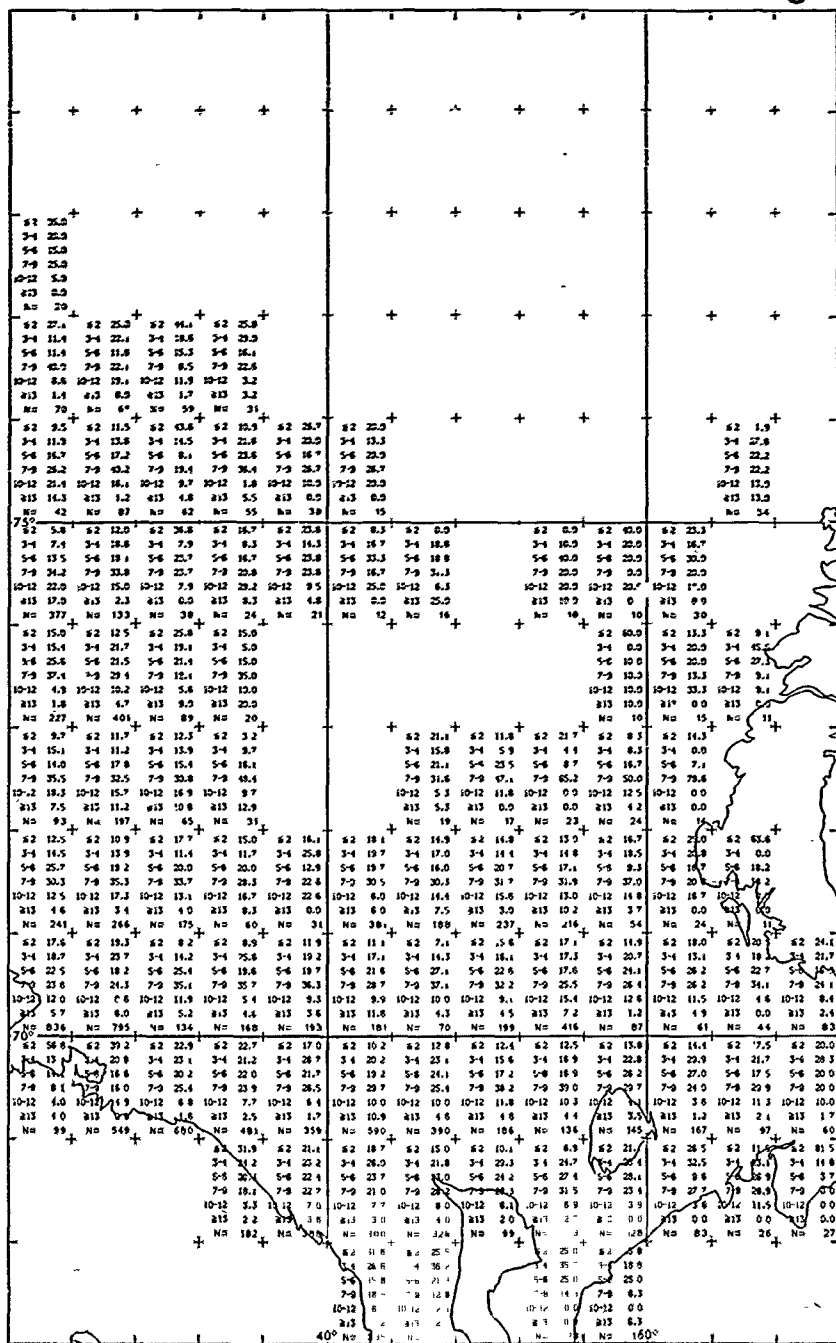
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

October Wave Height ≥ 8 Ft. & Ice Concentration



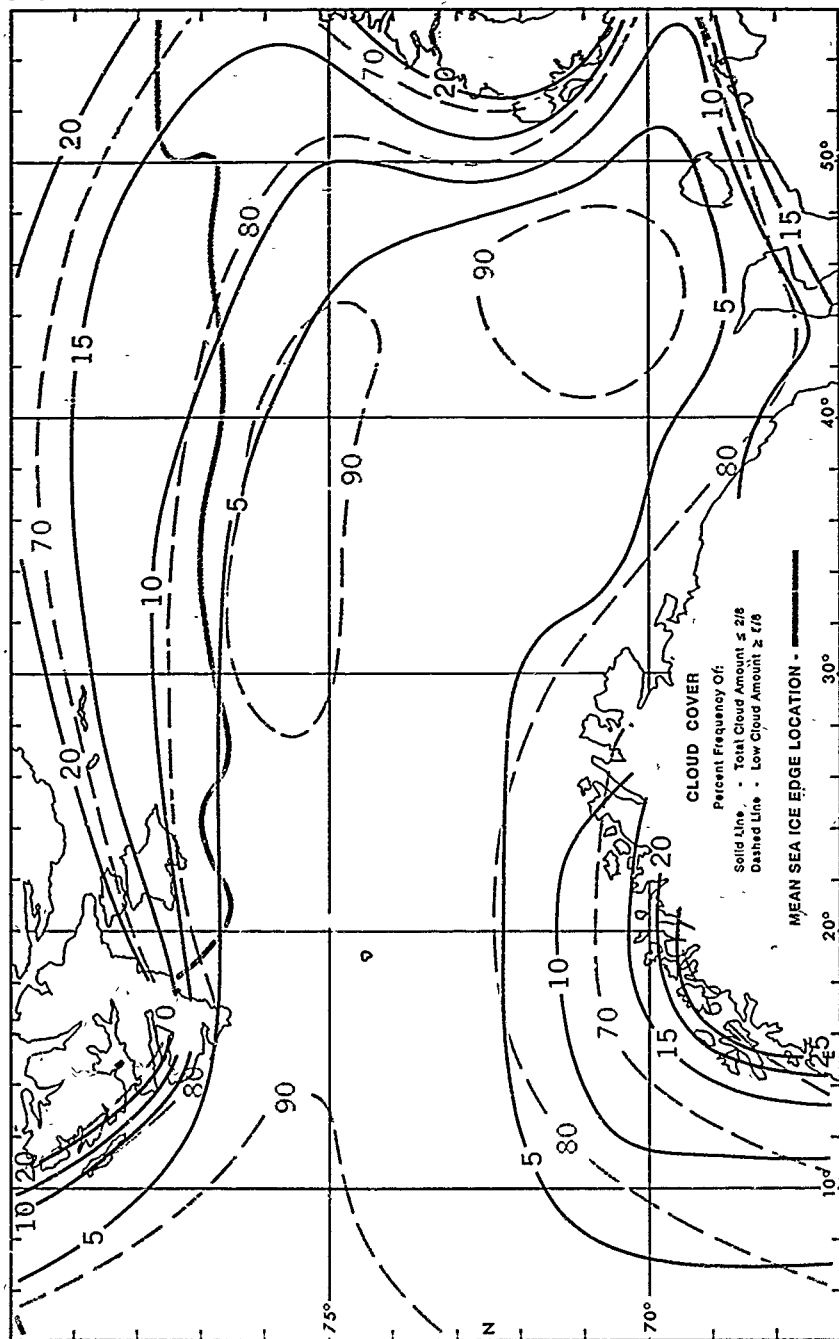
NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts





November

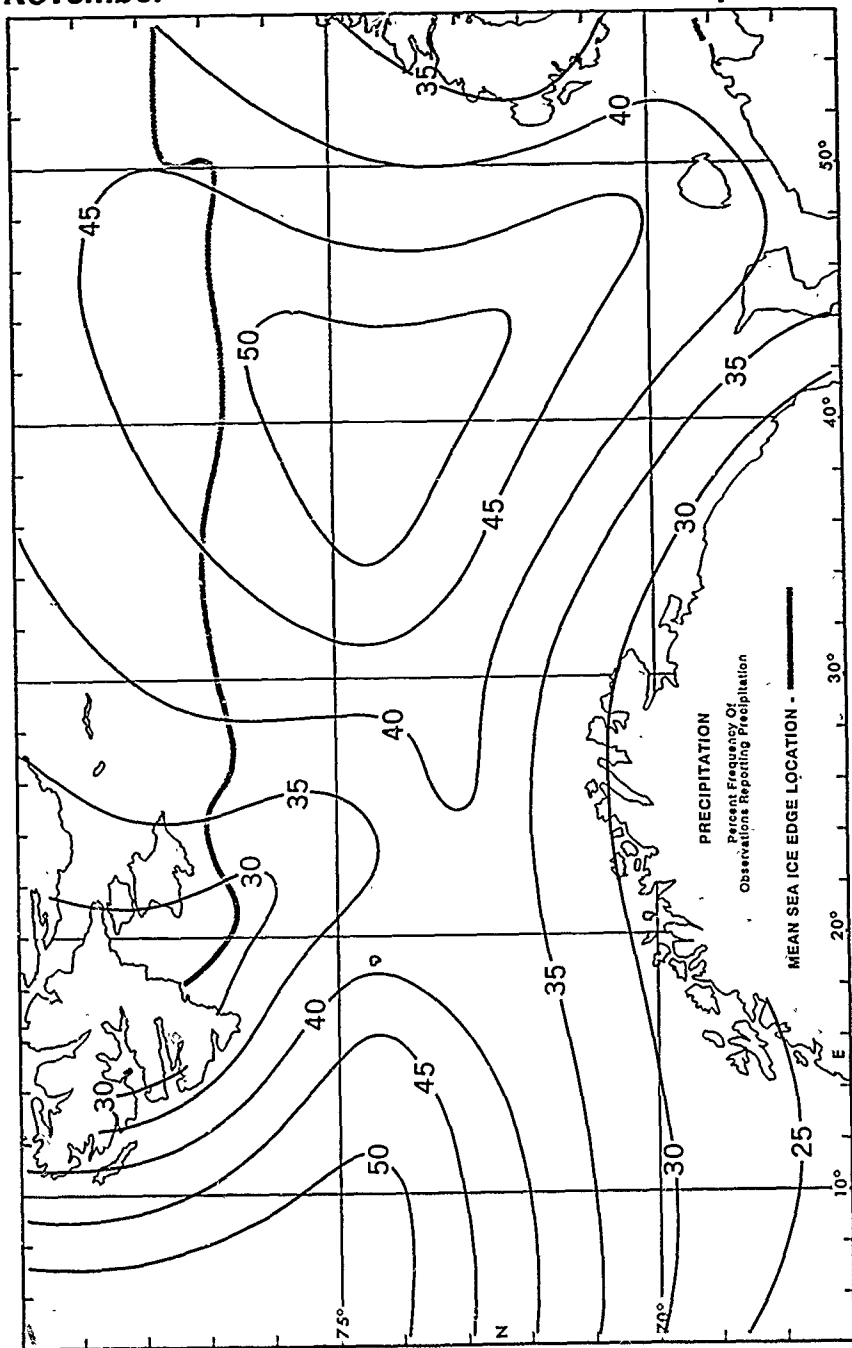
Clouds



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November

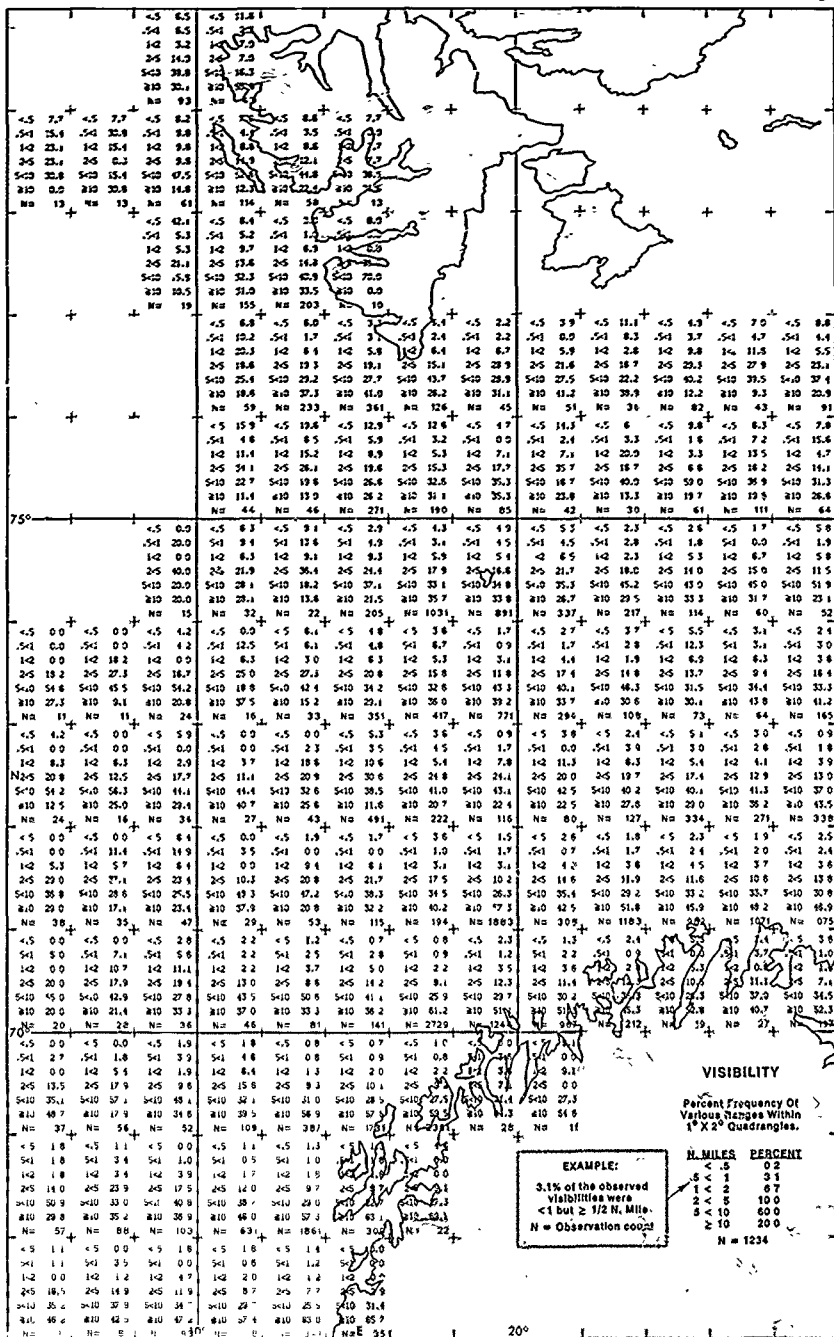
Precipitation

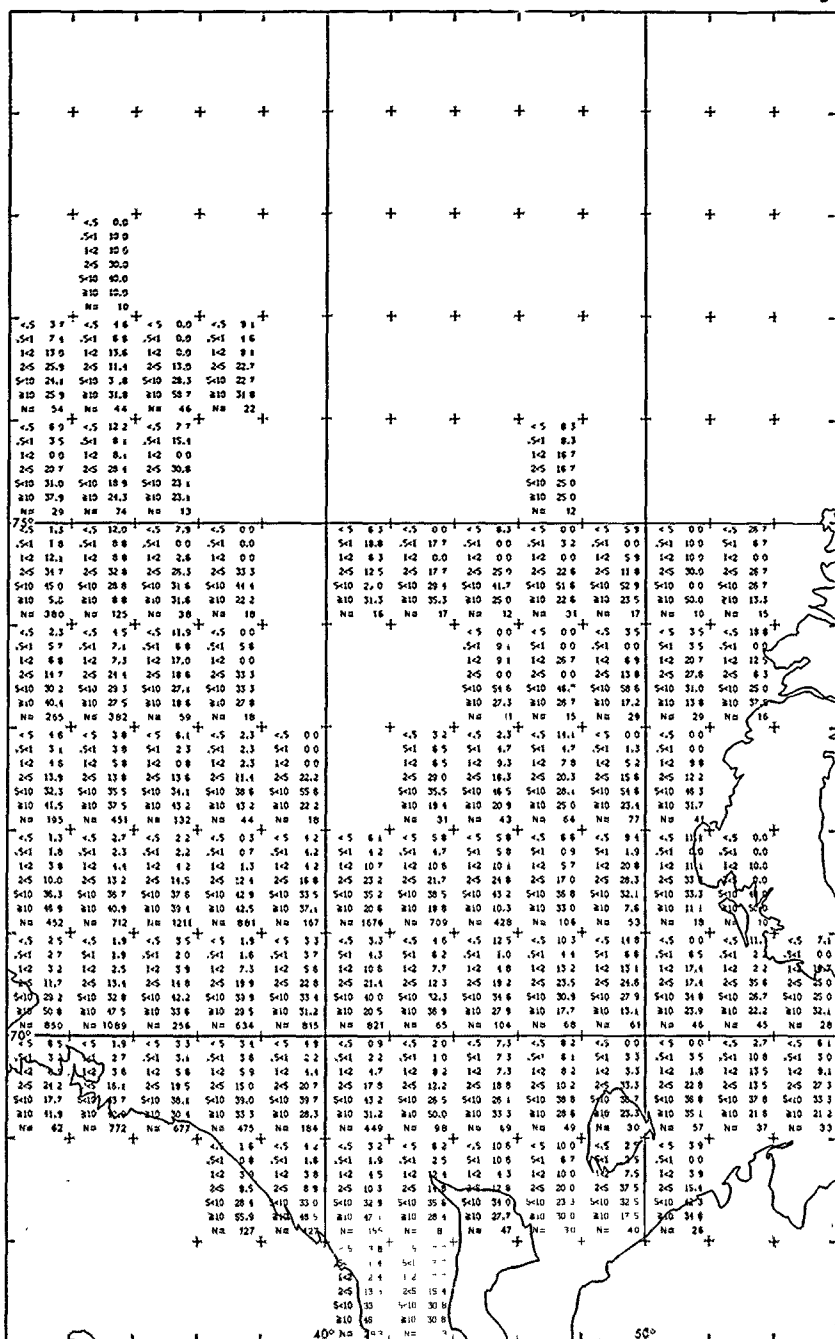


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November

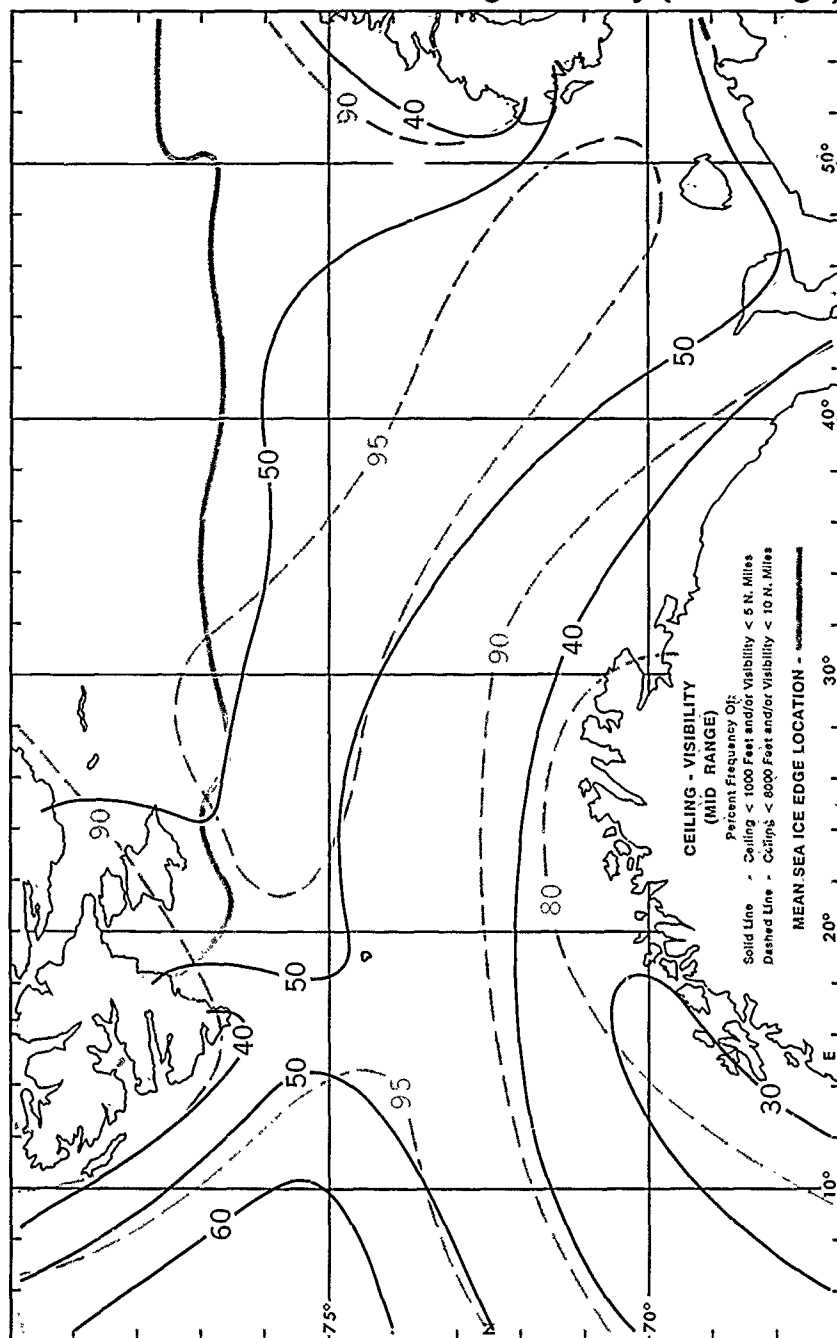
Visibility





November

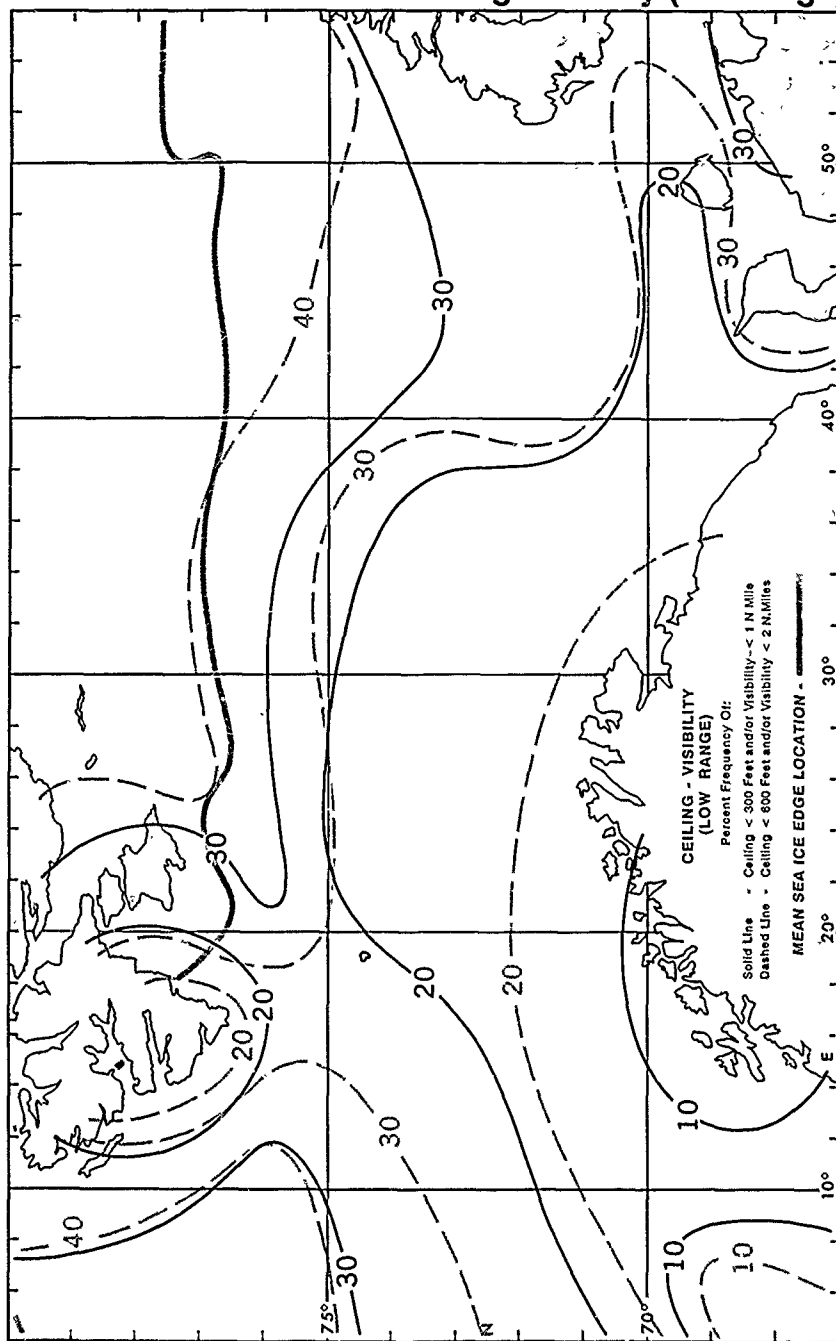
Ceiling-Visibility (mid range)



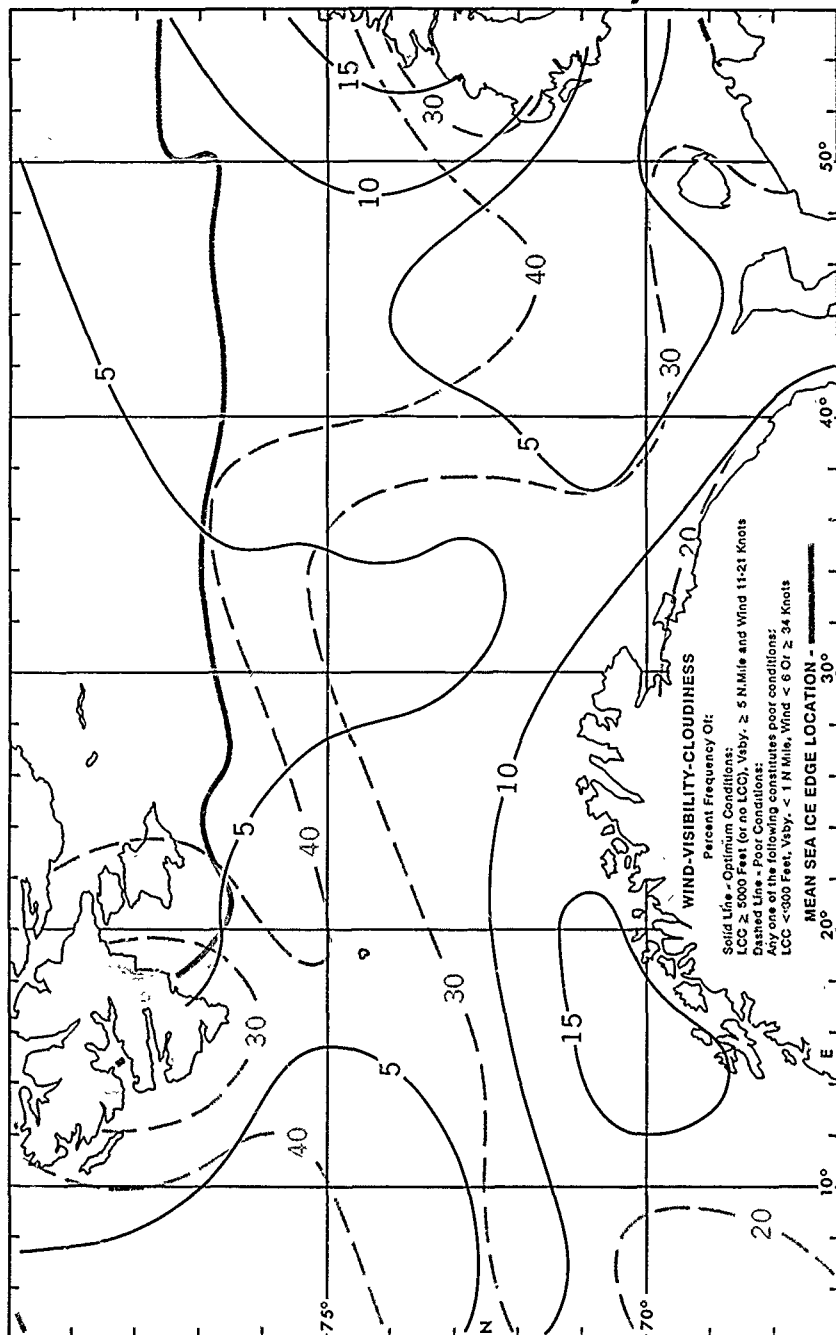
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November

Ceiling-Visibility (low range)



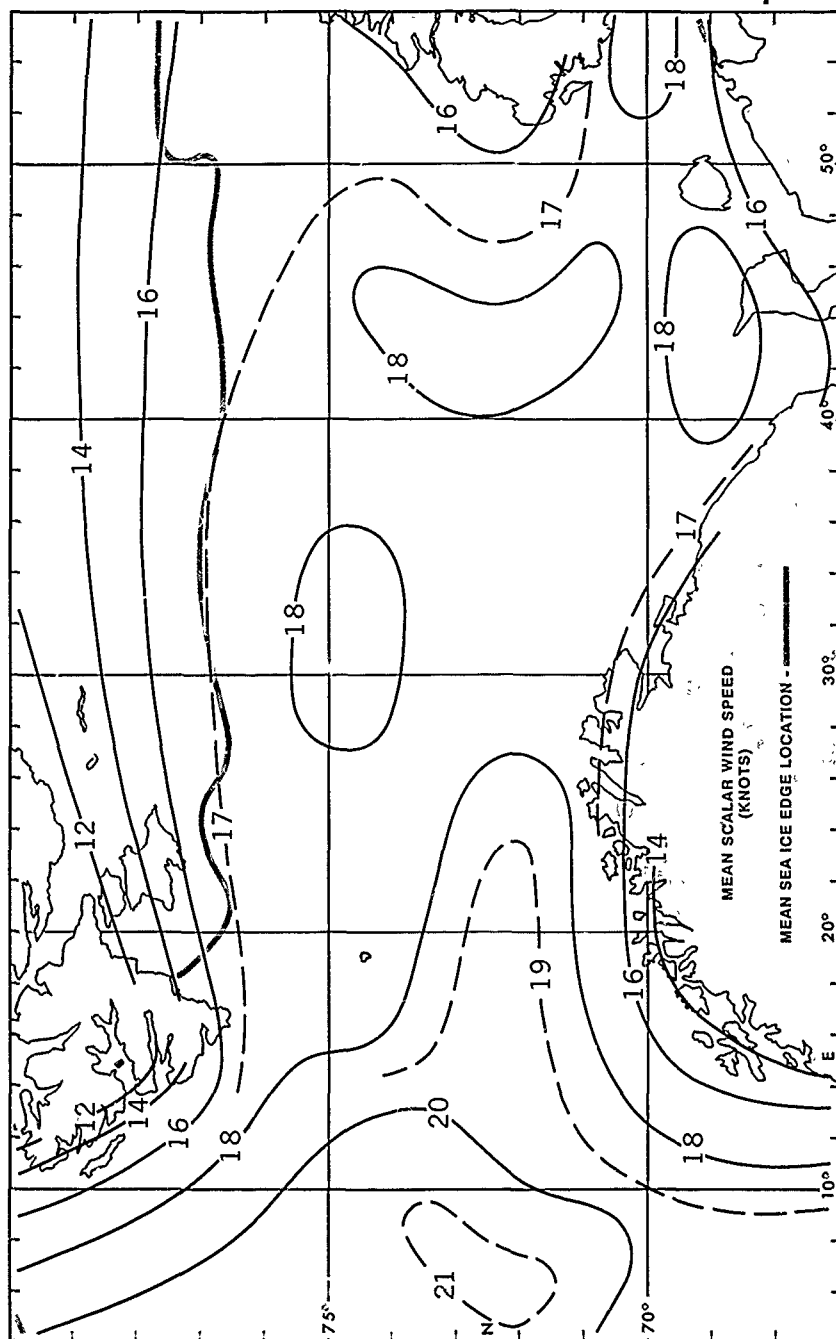
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

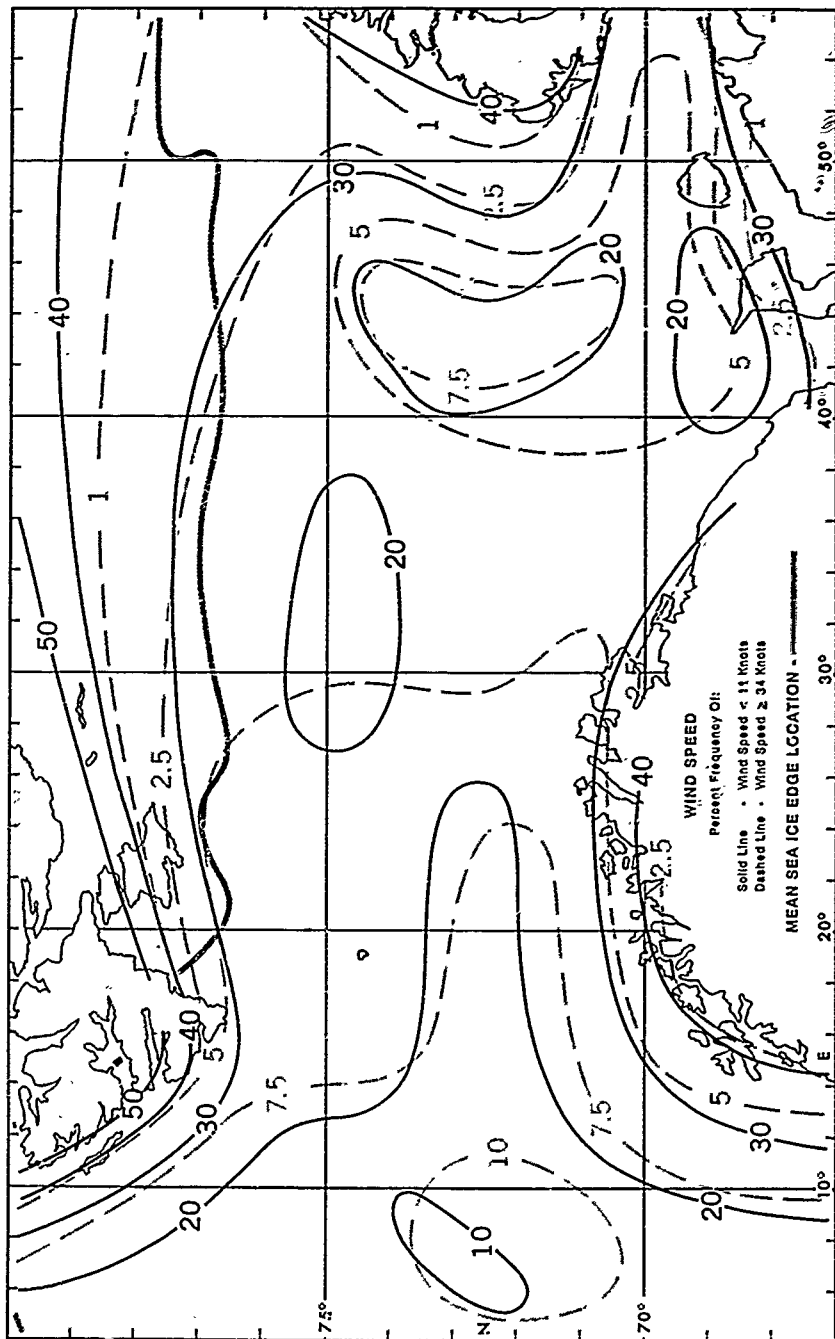
November

Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

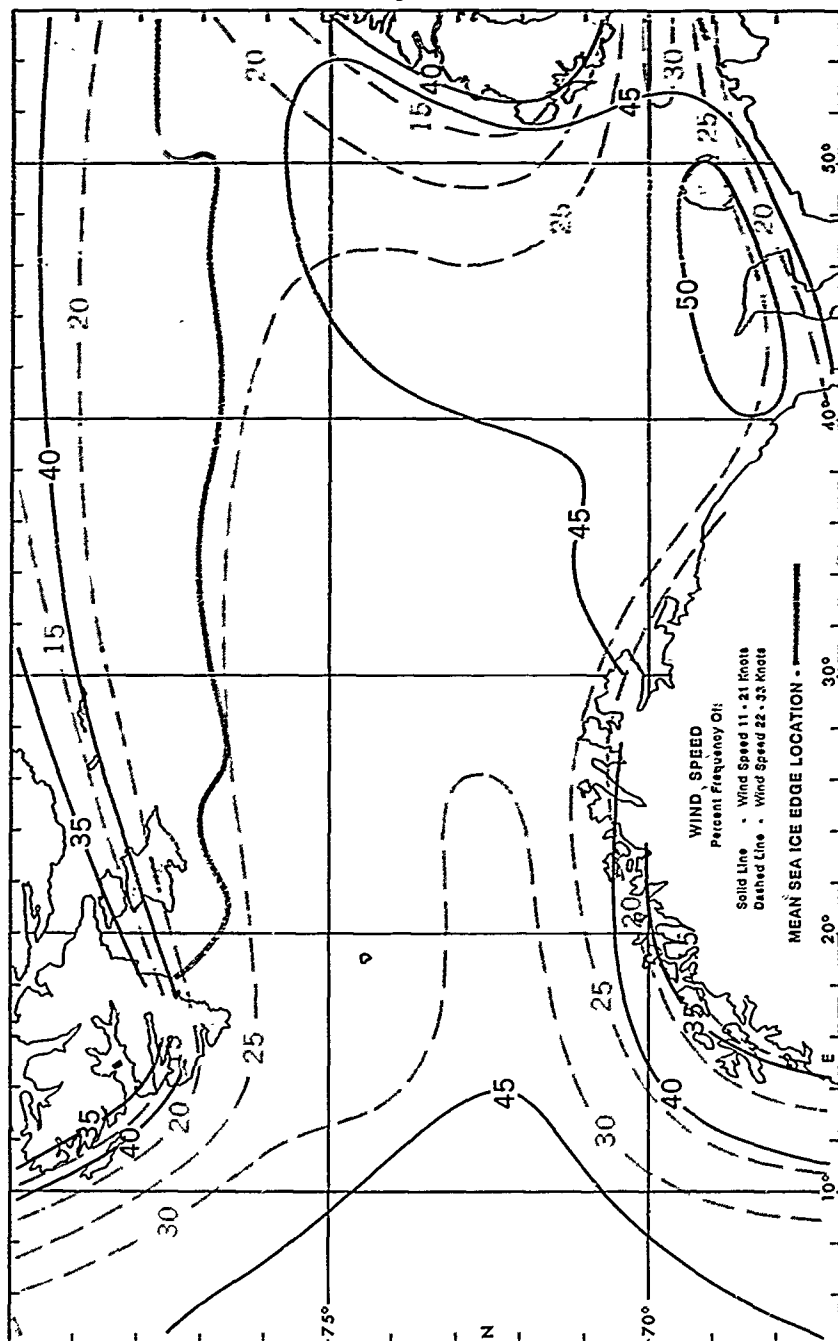
November

Wind Speed < 11 and ≥ 34 Knots

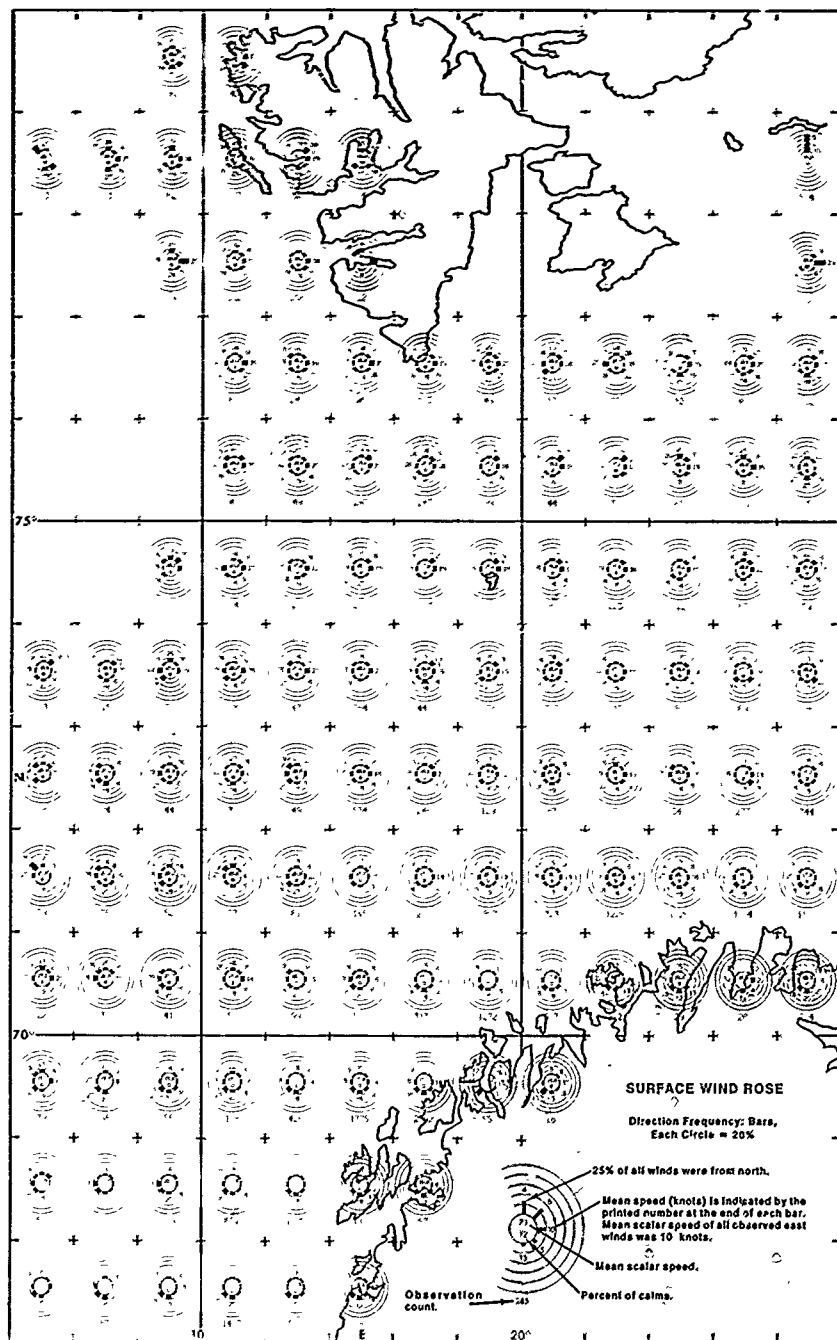
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November

Wind Speed 11-21 and 22-33 Knots

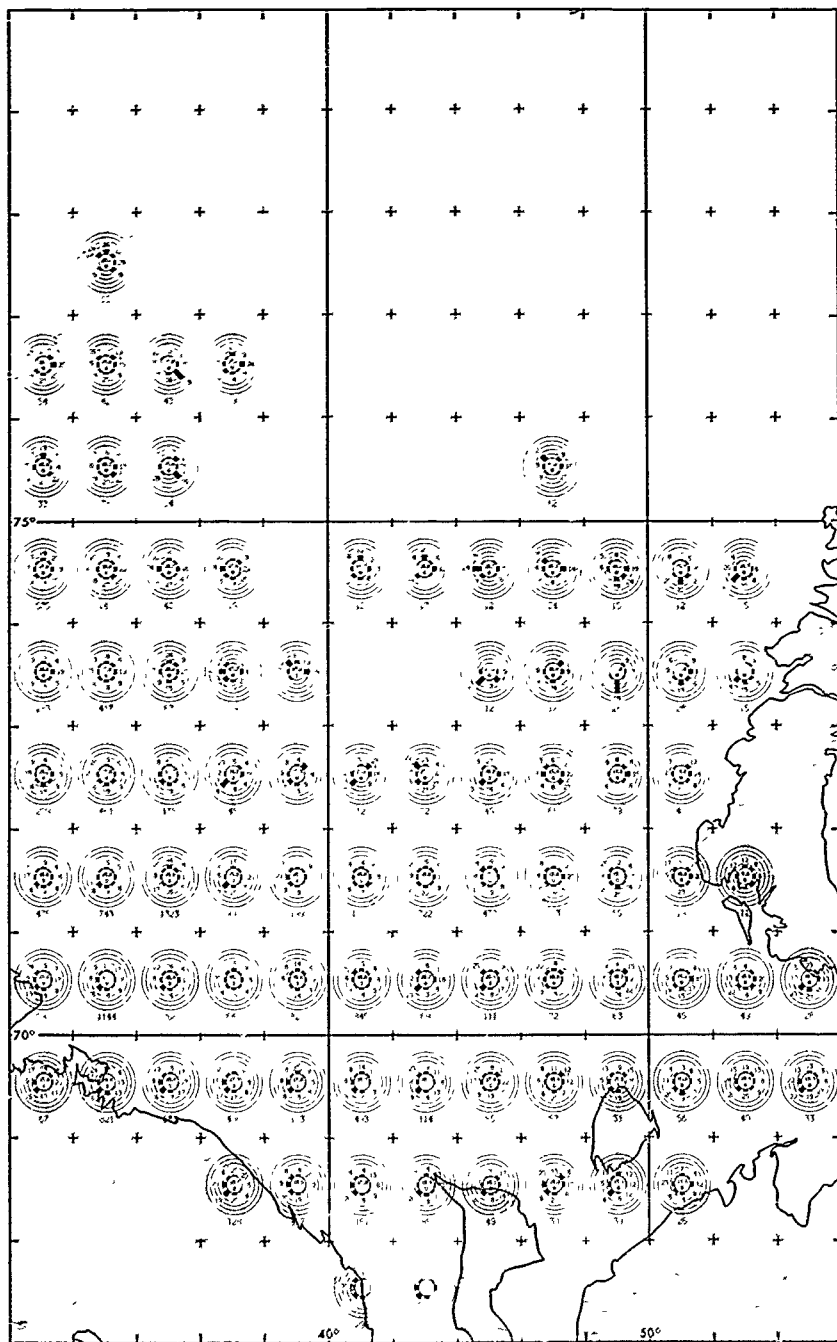


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



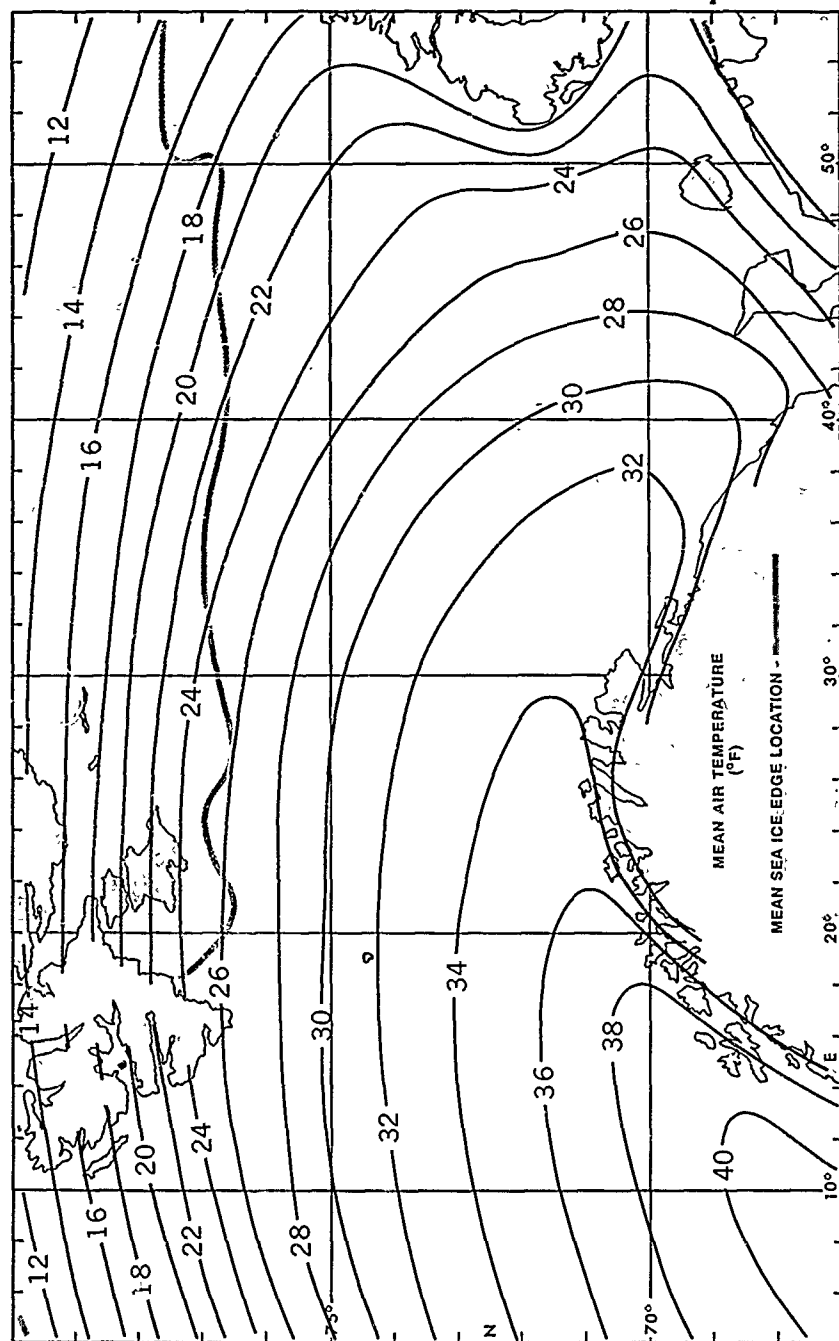
November

Surface Wind Roses



November

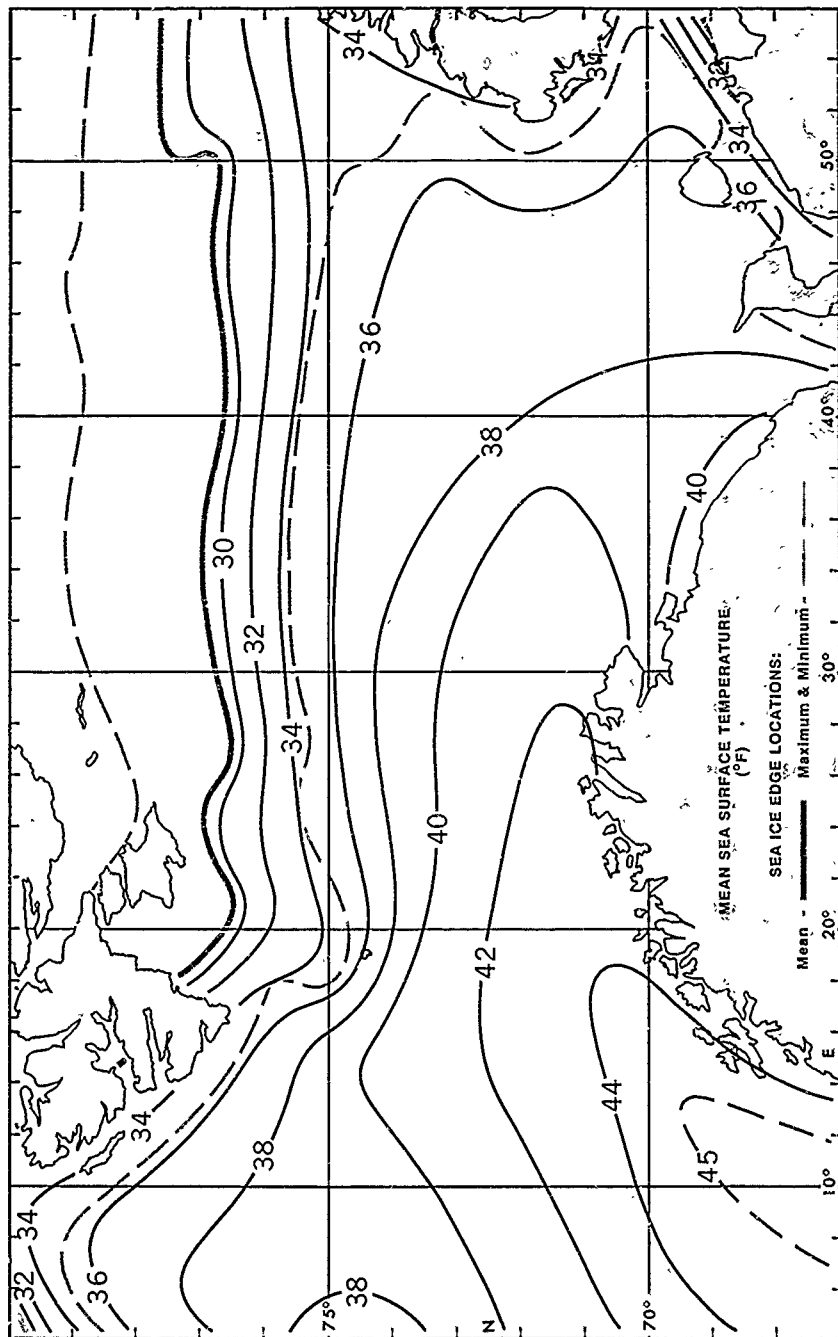
Mean Air Temperature



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

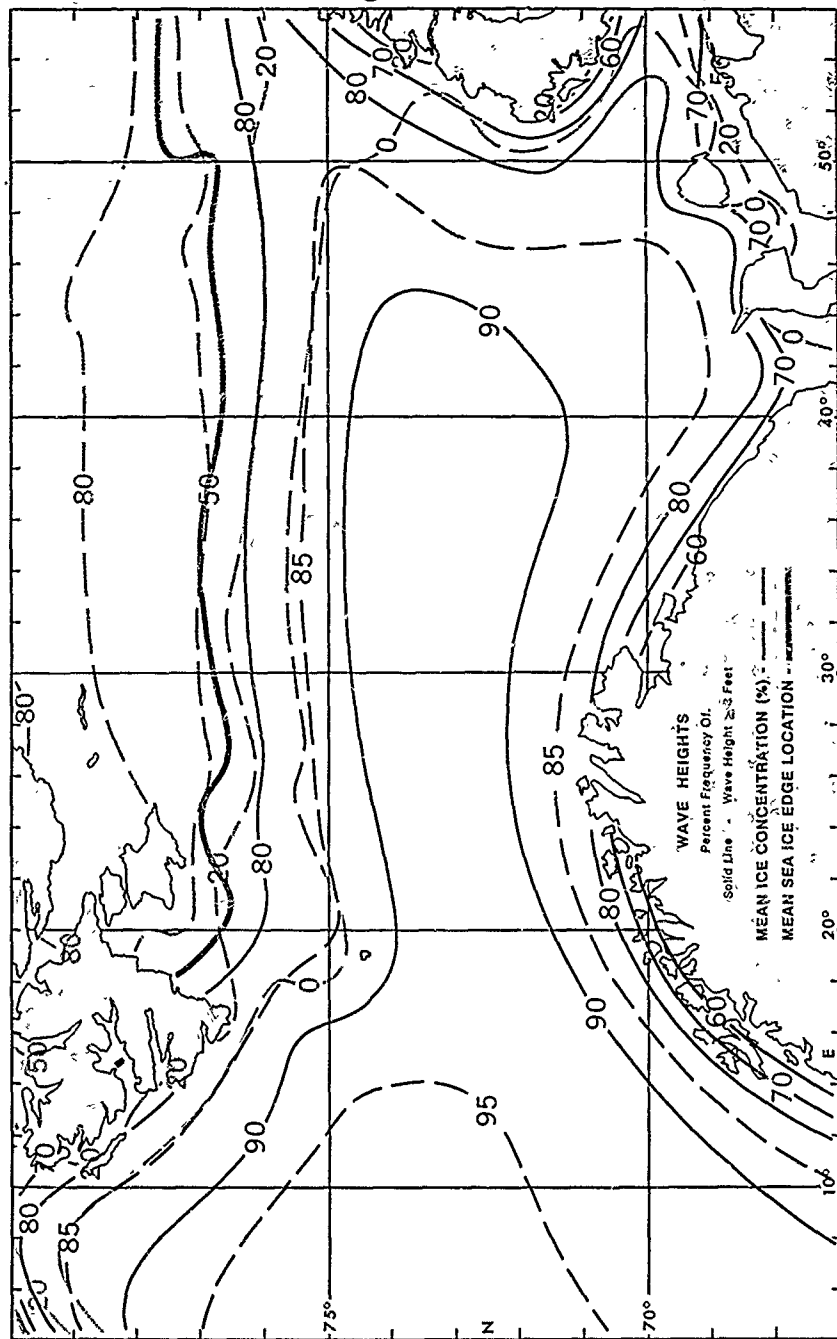
November

Mean Sea Temperature & Ice Edge



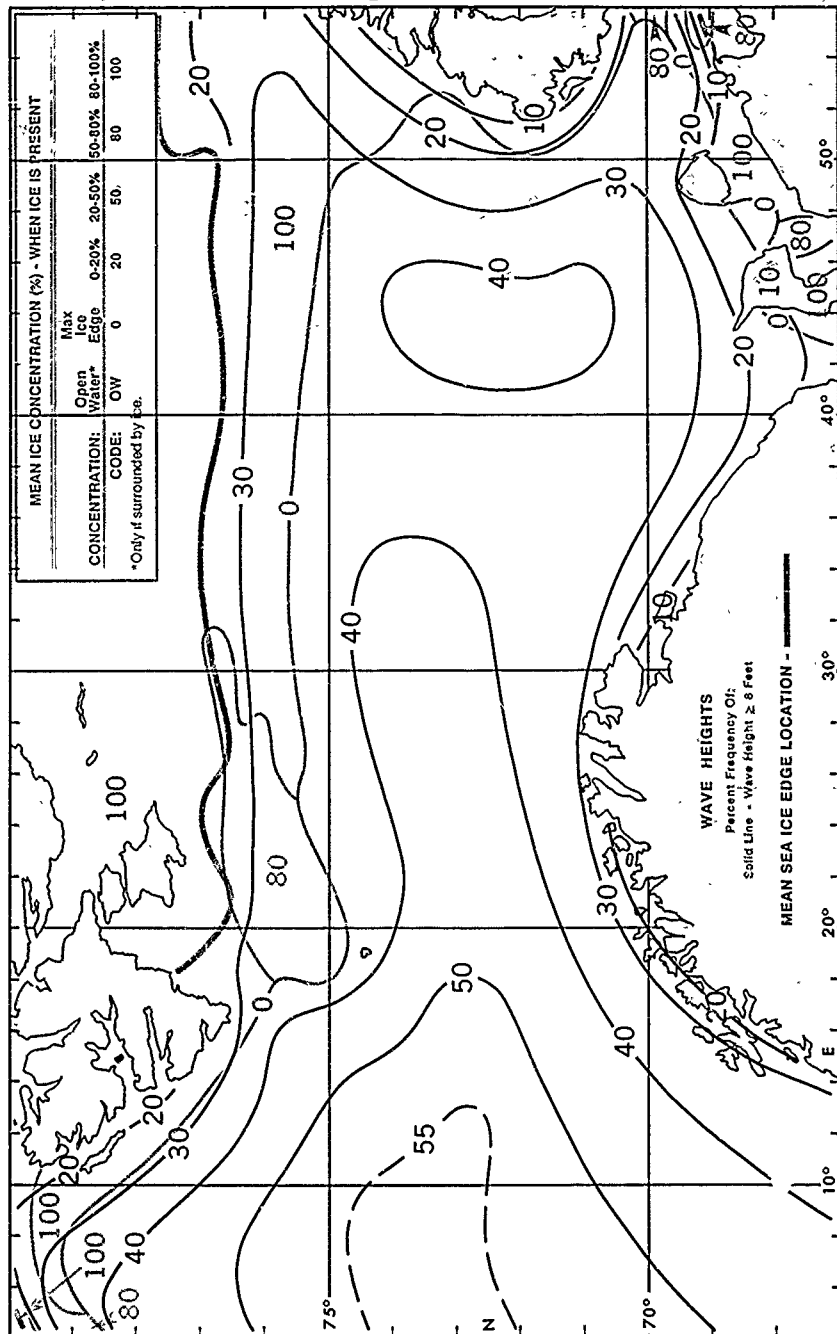
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November Wave Height ≥ 3 Ft. & Ice Concentration

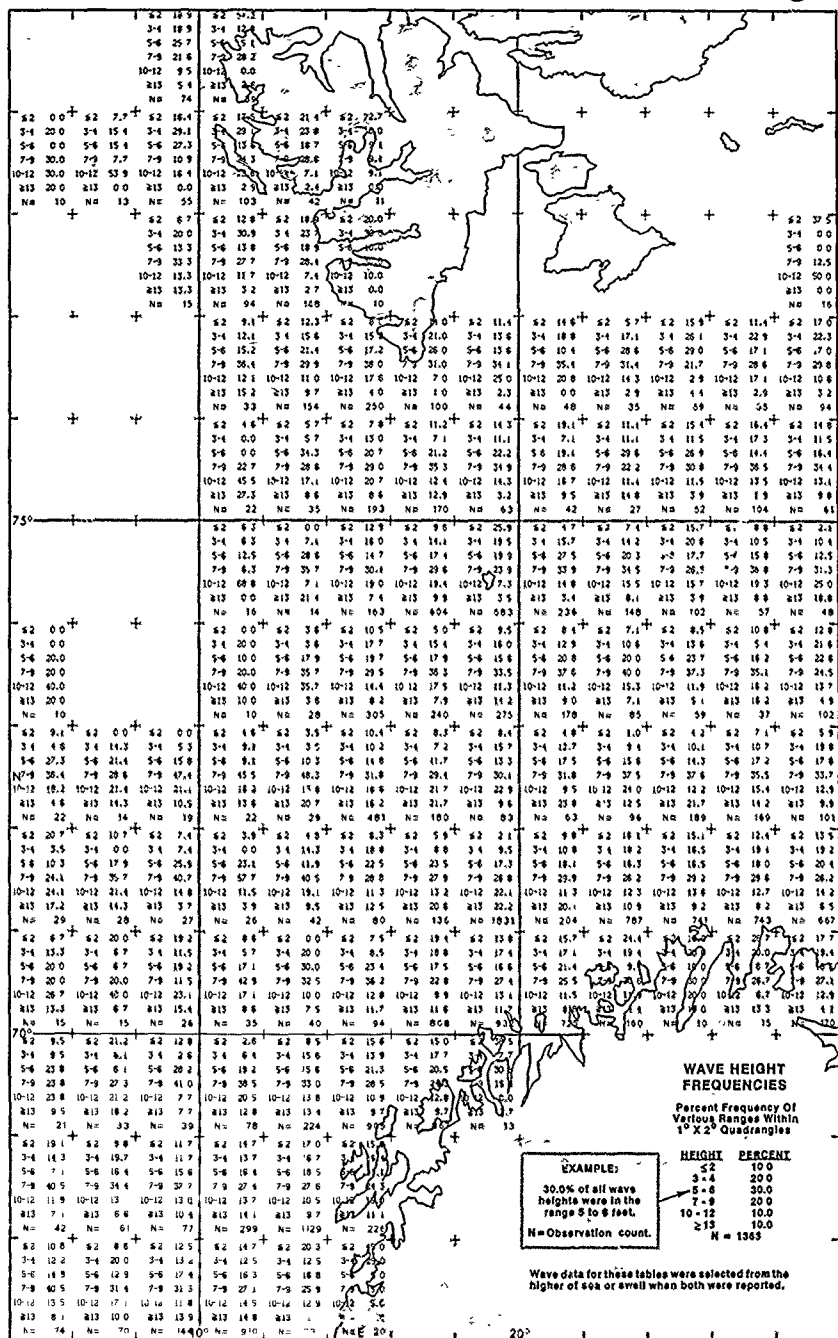


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November Wave Height ≥ 8 Ft. & Ice Concentration

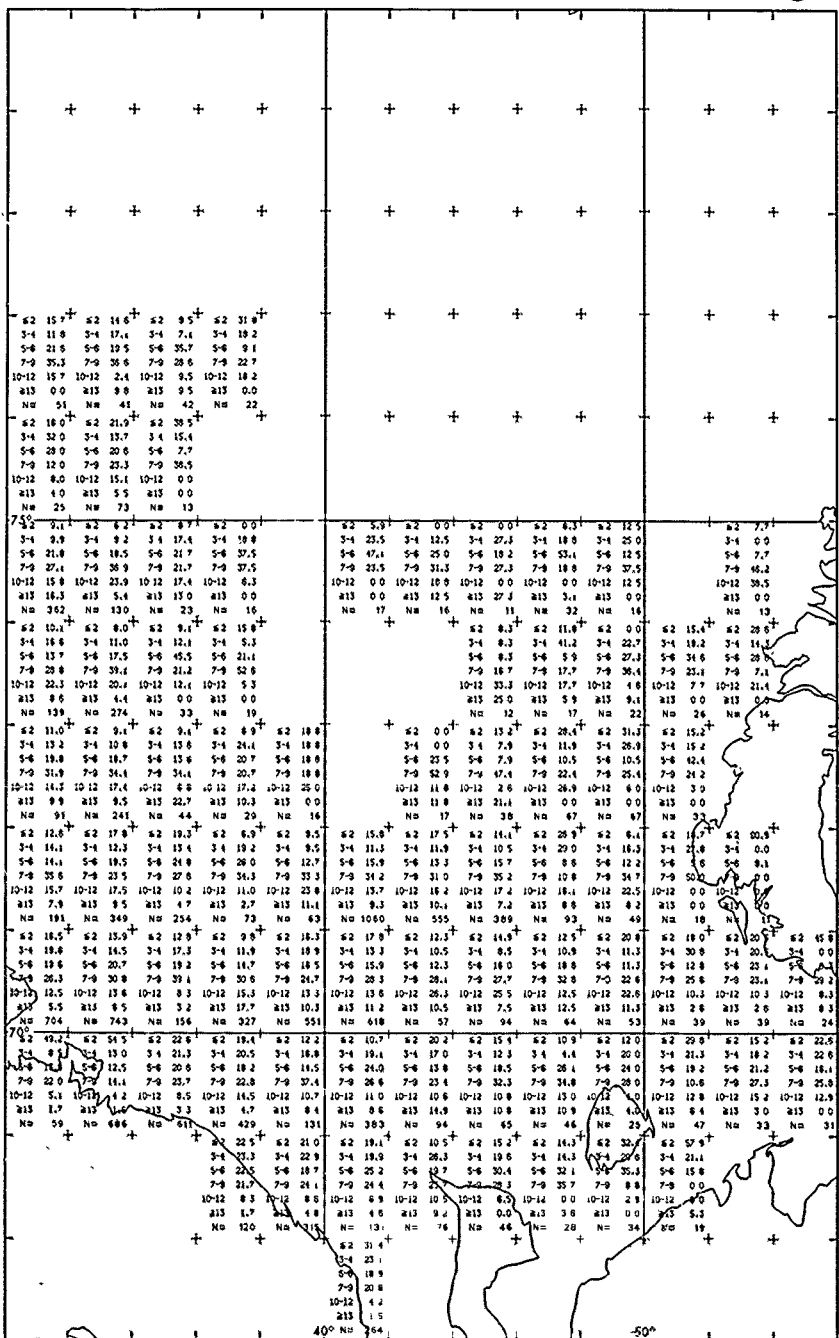


NOTE . Analysis beyond the mean ice ice edge is highly subjective due to low observation counts



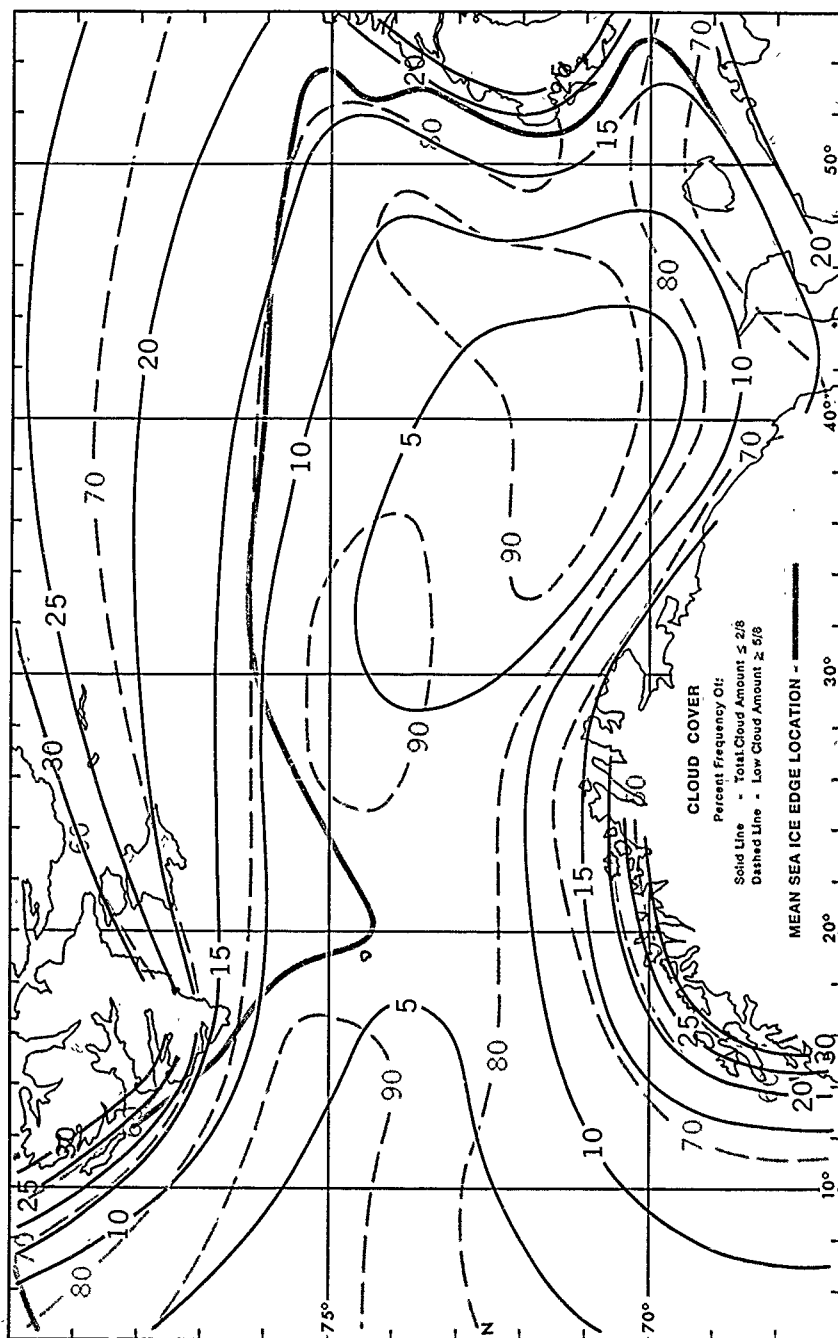
November Wave Height

November Wave Height



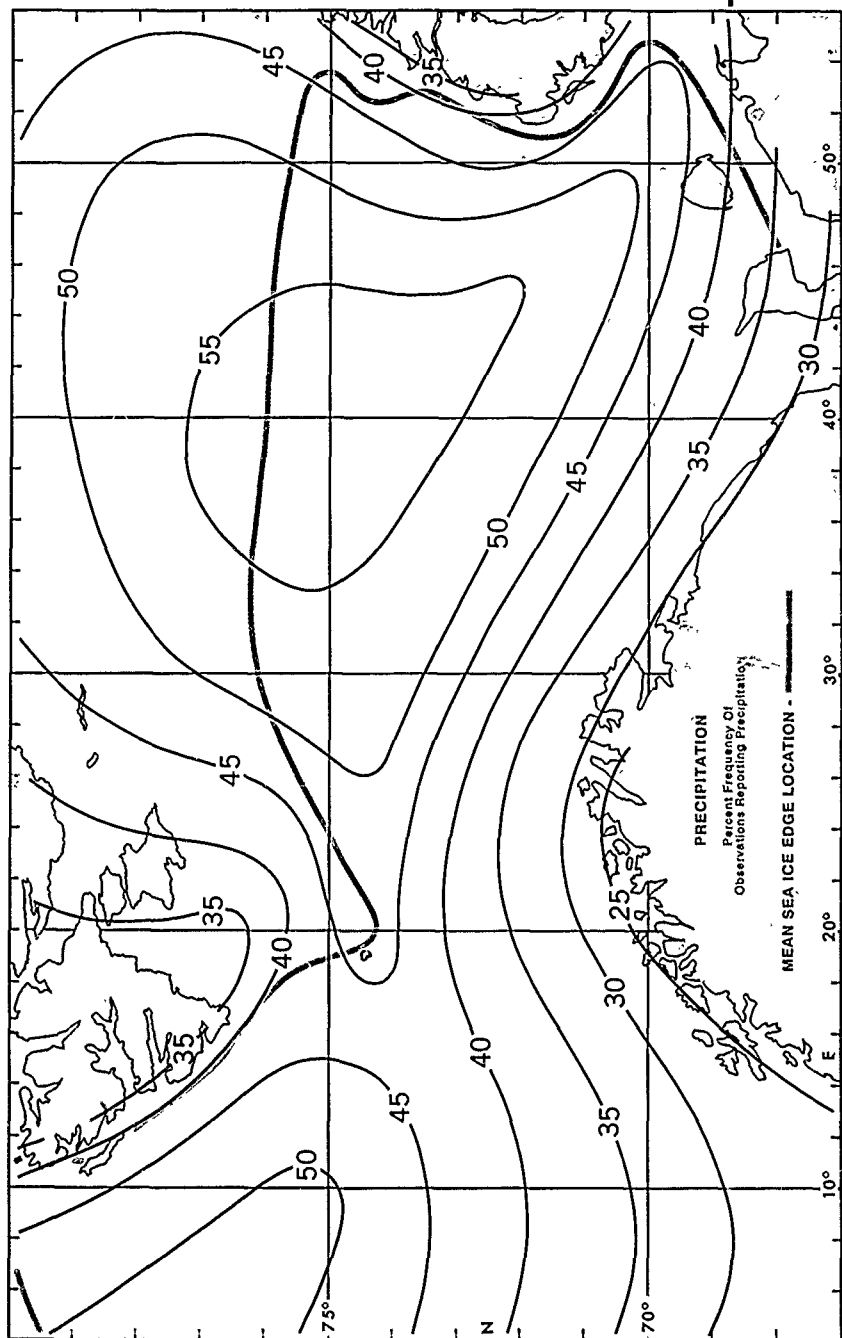
December

Clouds



December

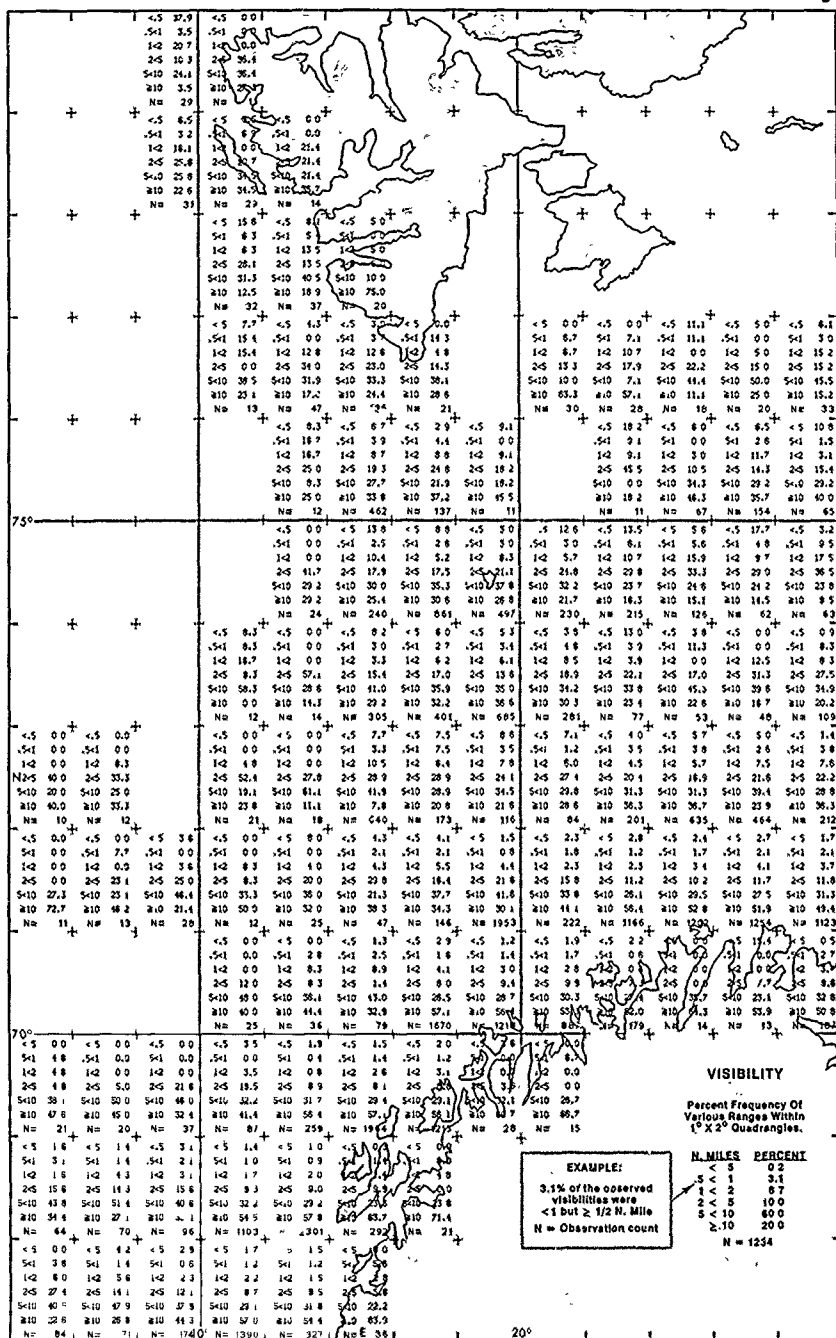
Precipitation



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

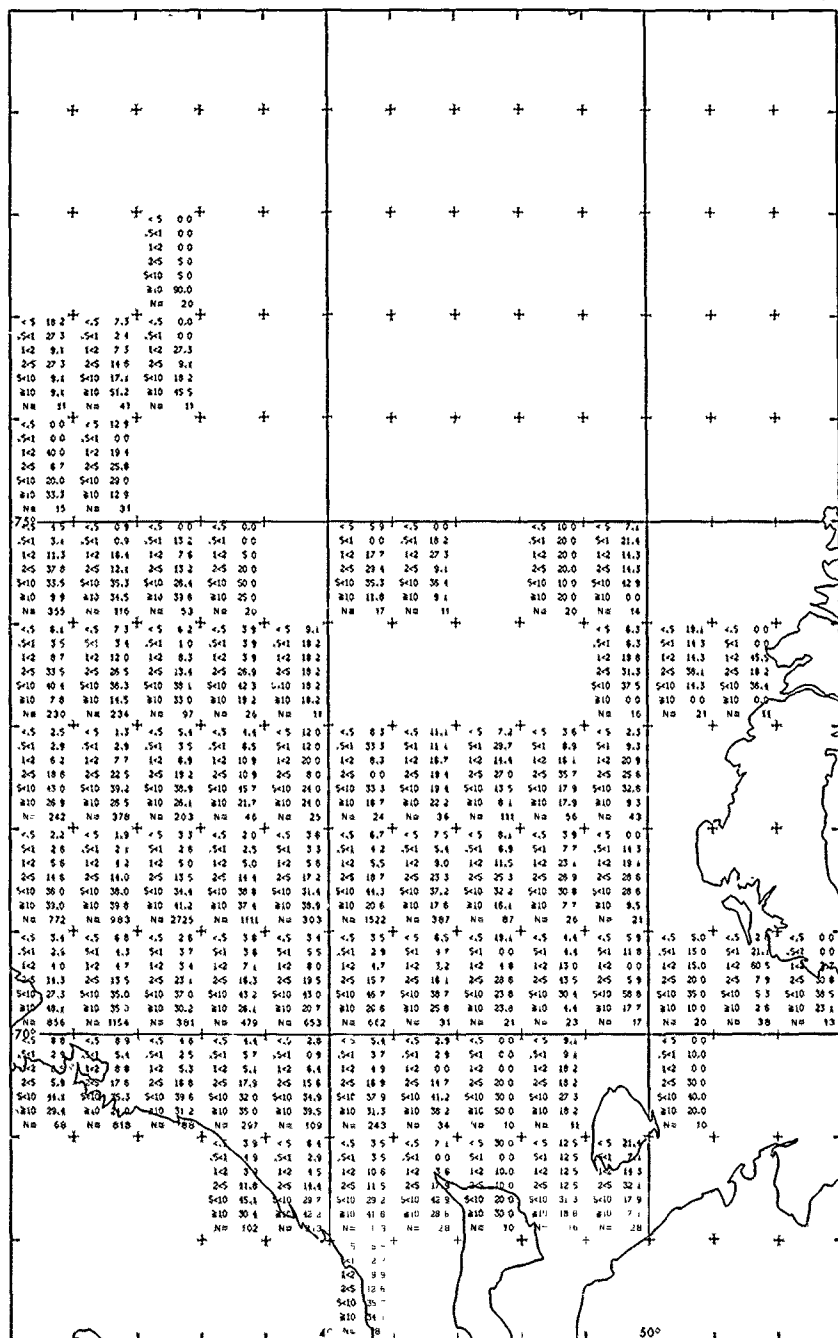
December

Visibility



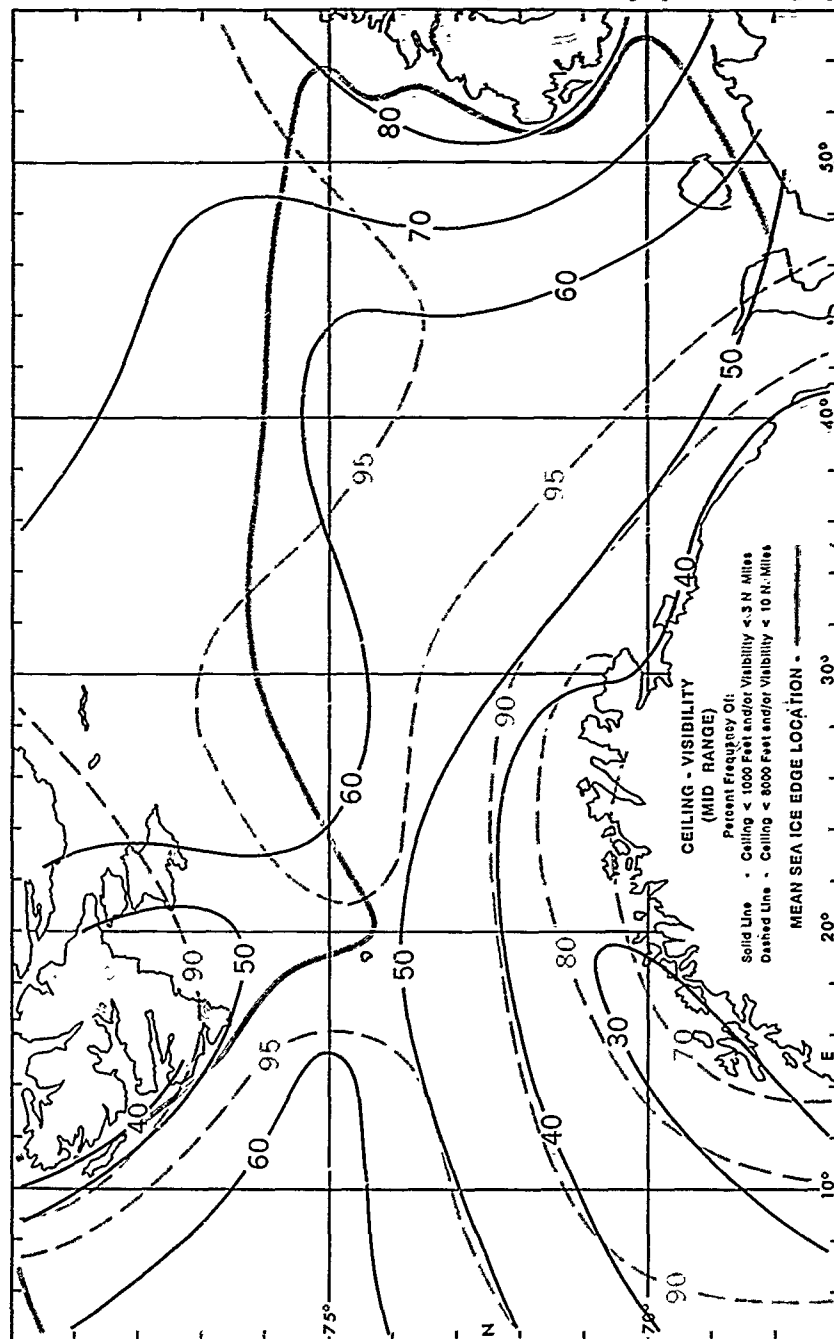
December

Visibility



December

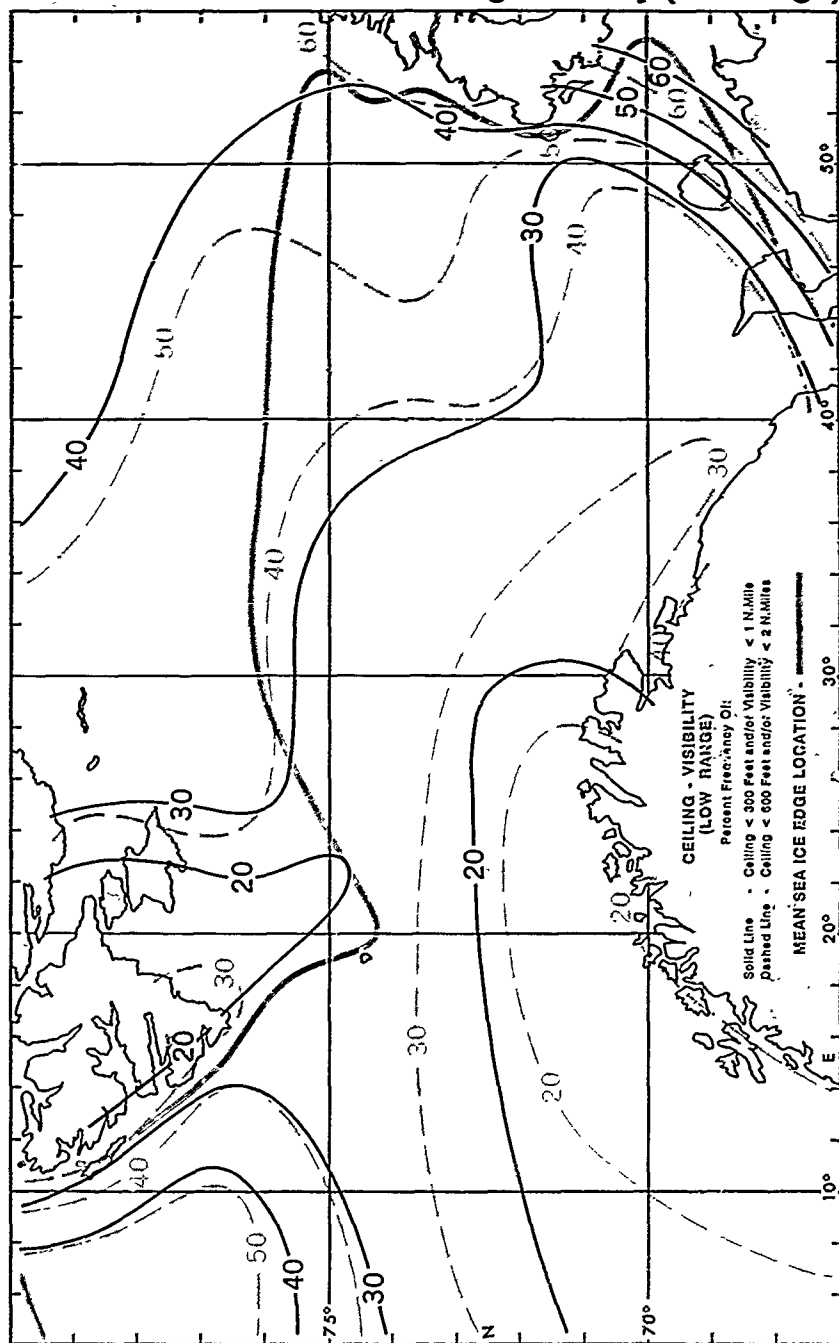
Ceiling-Visibility (mid range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December

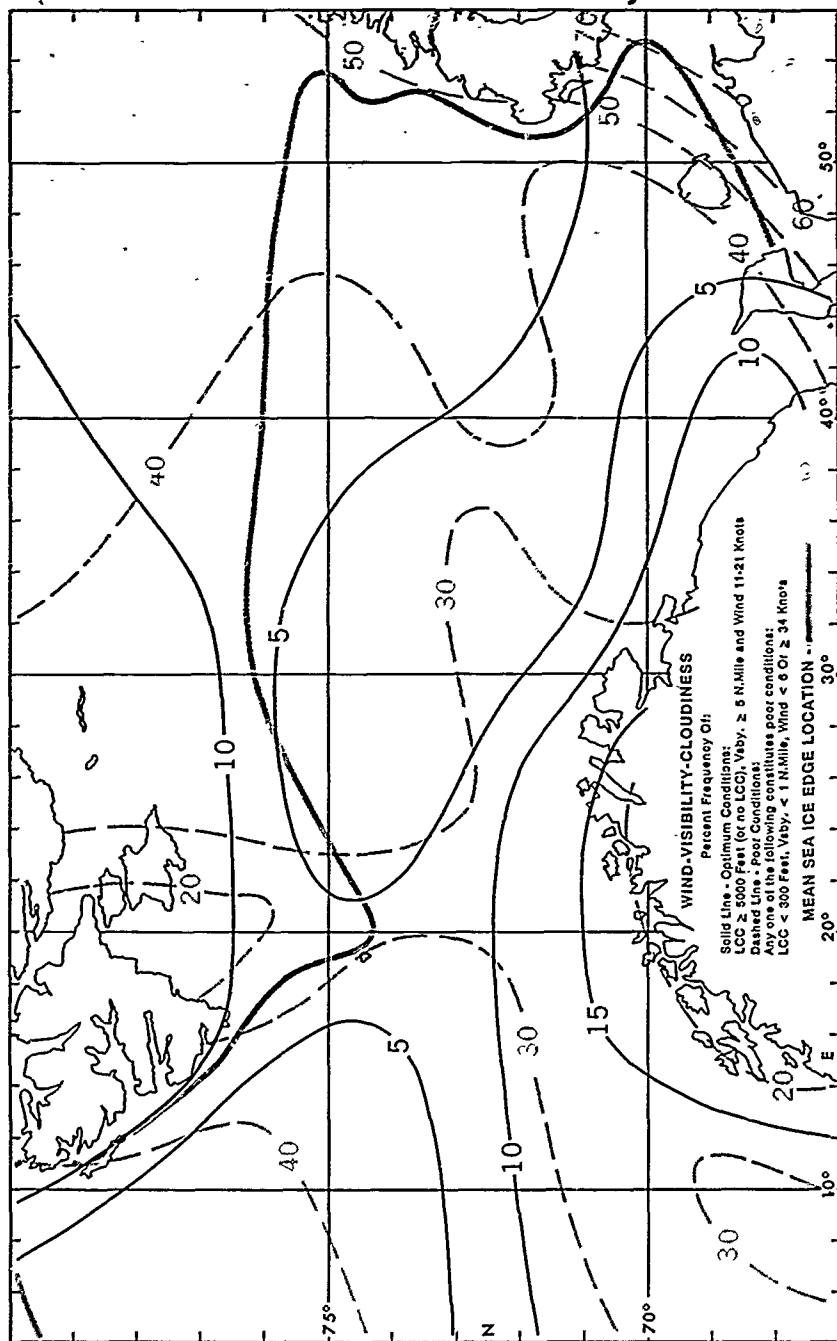
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

December

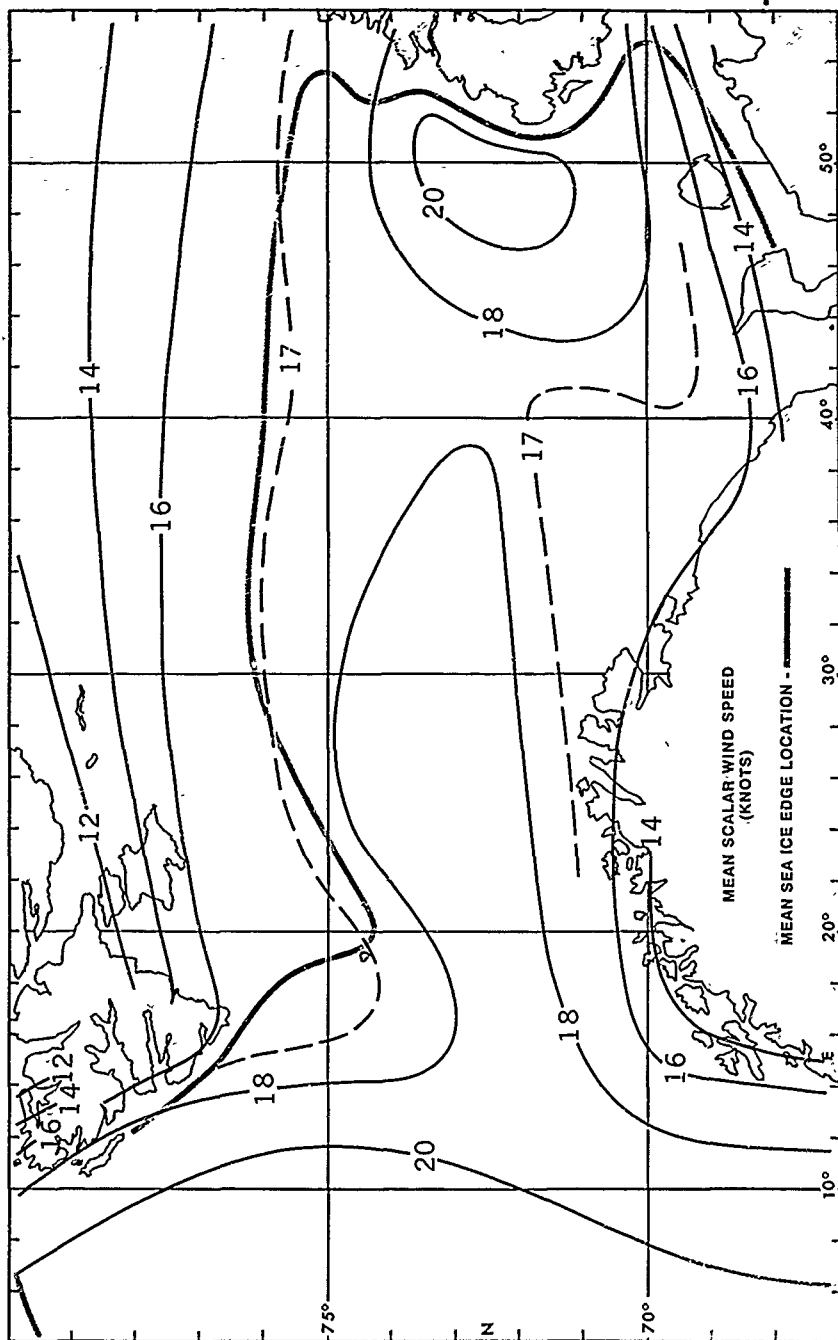
Wind-Visibility-Cloudiness



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December

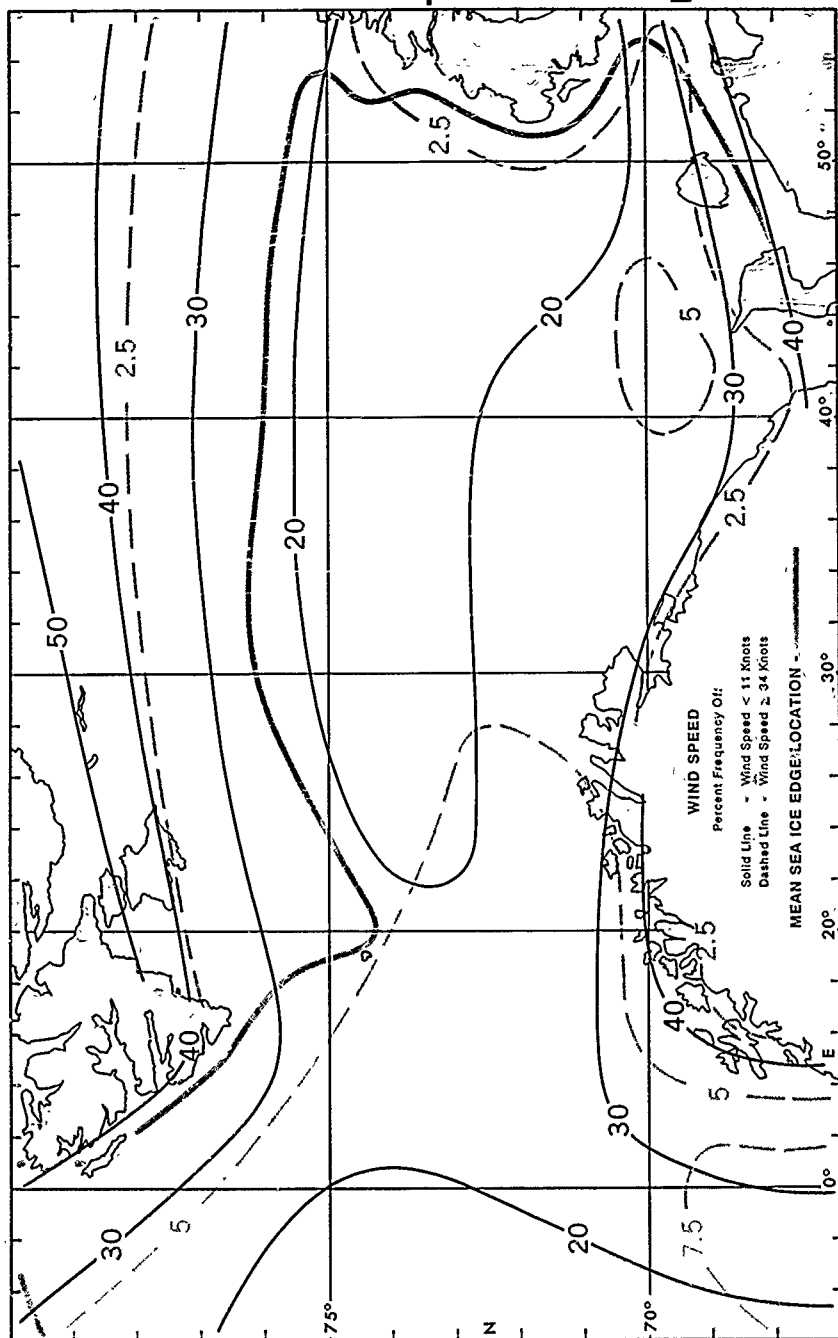
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December

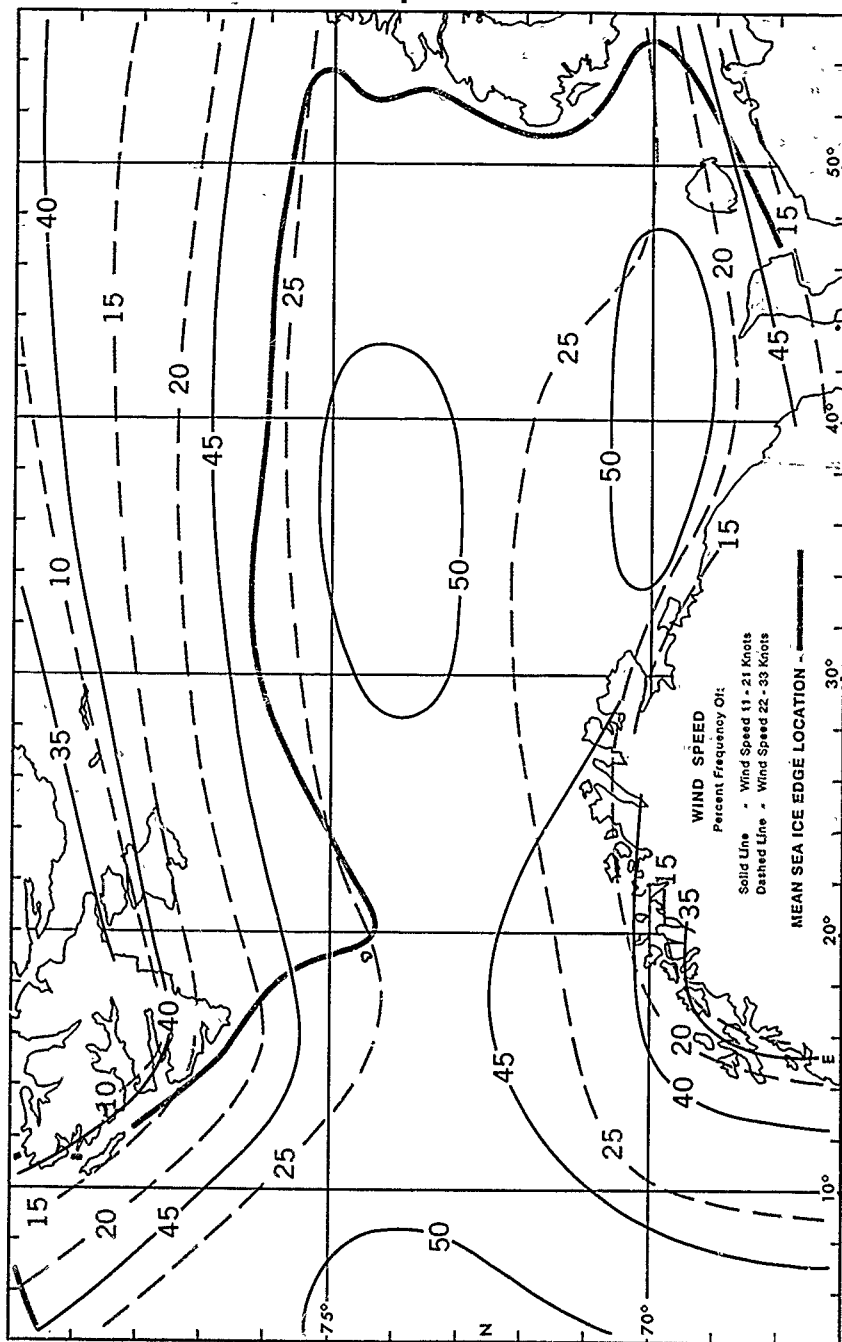
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

December

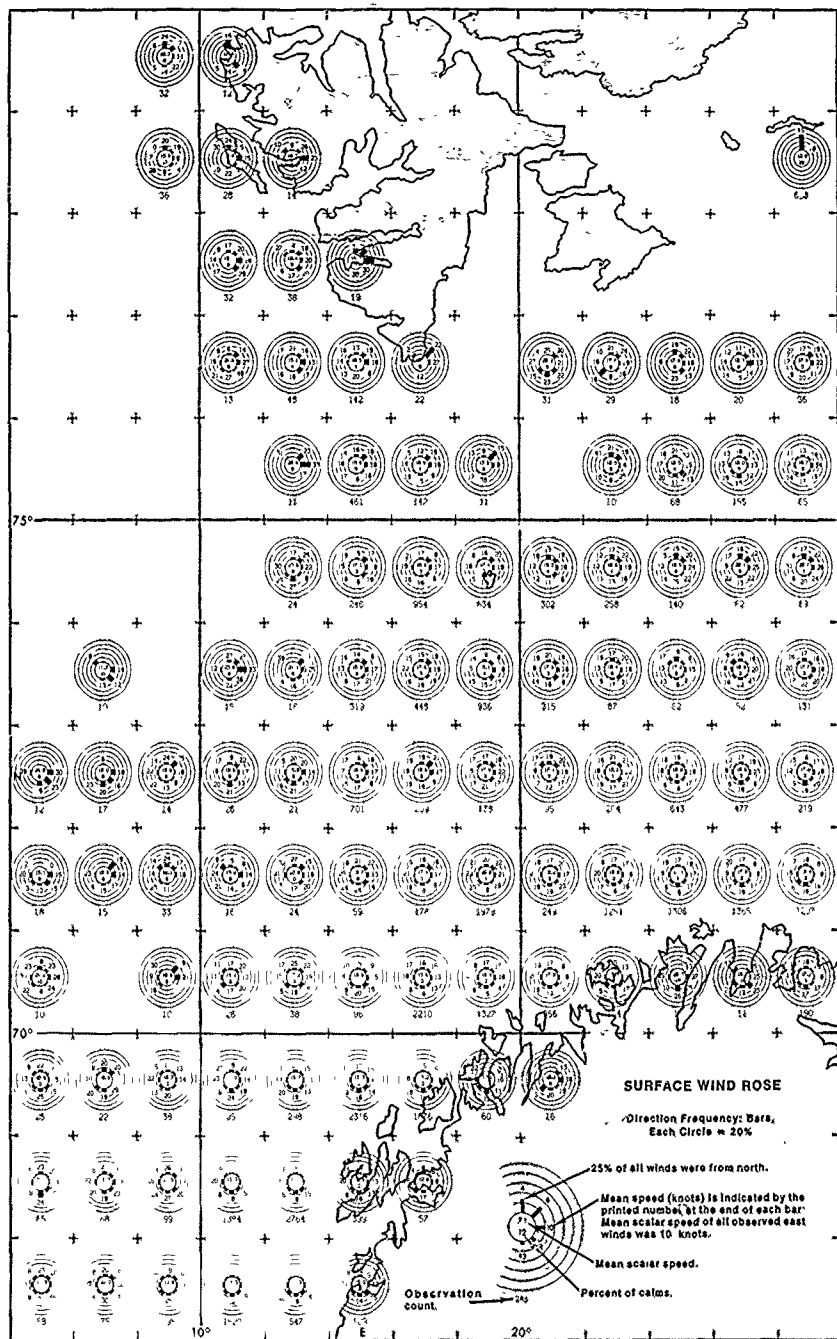
Wind Speed 11-21 and 22-33 Knots



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

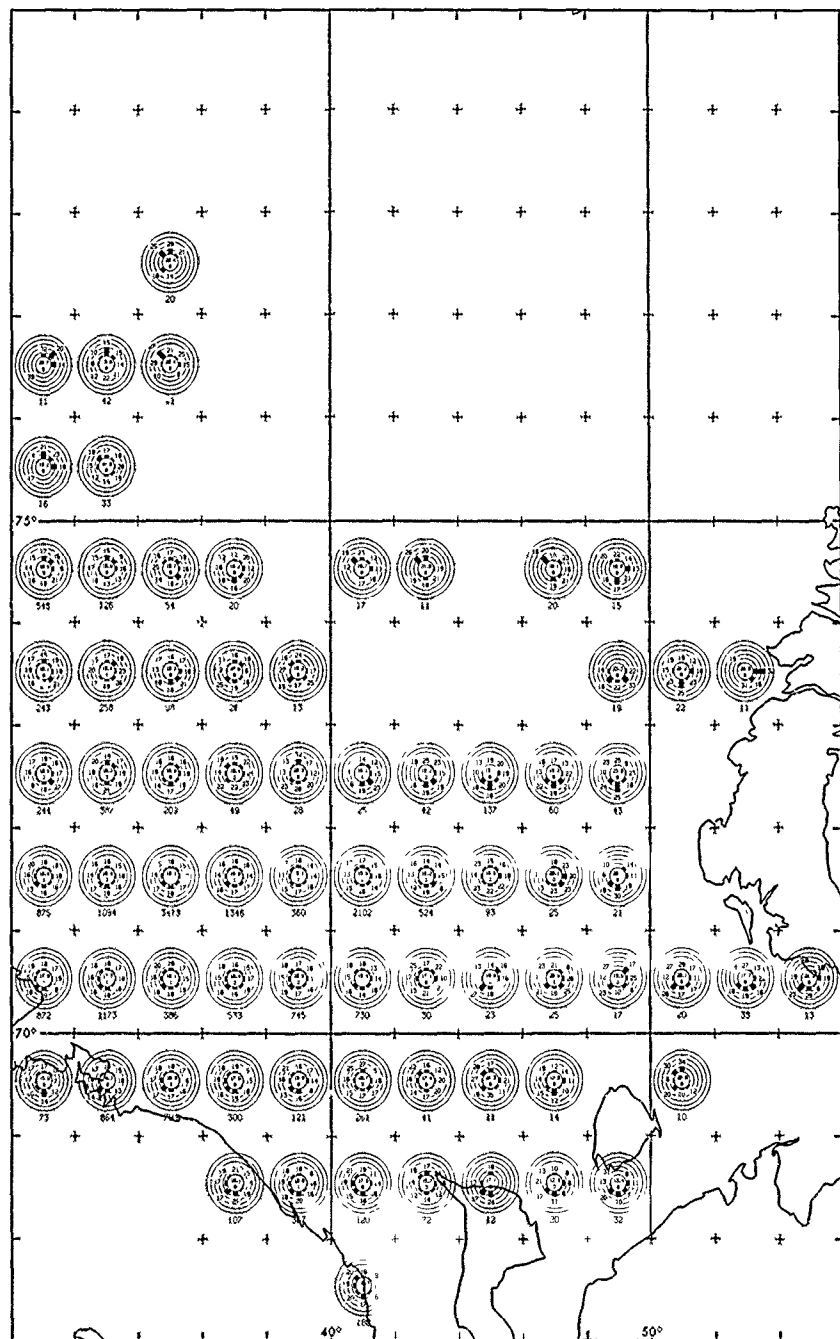
December

Surface Wind Roses



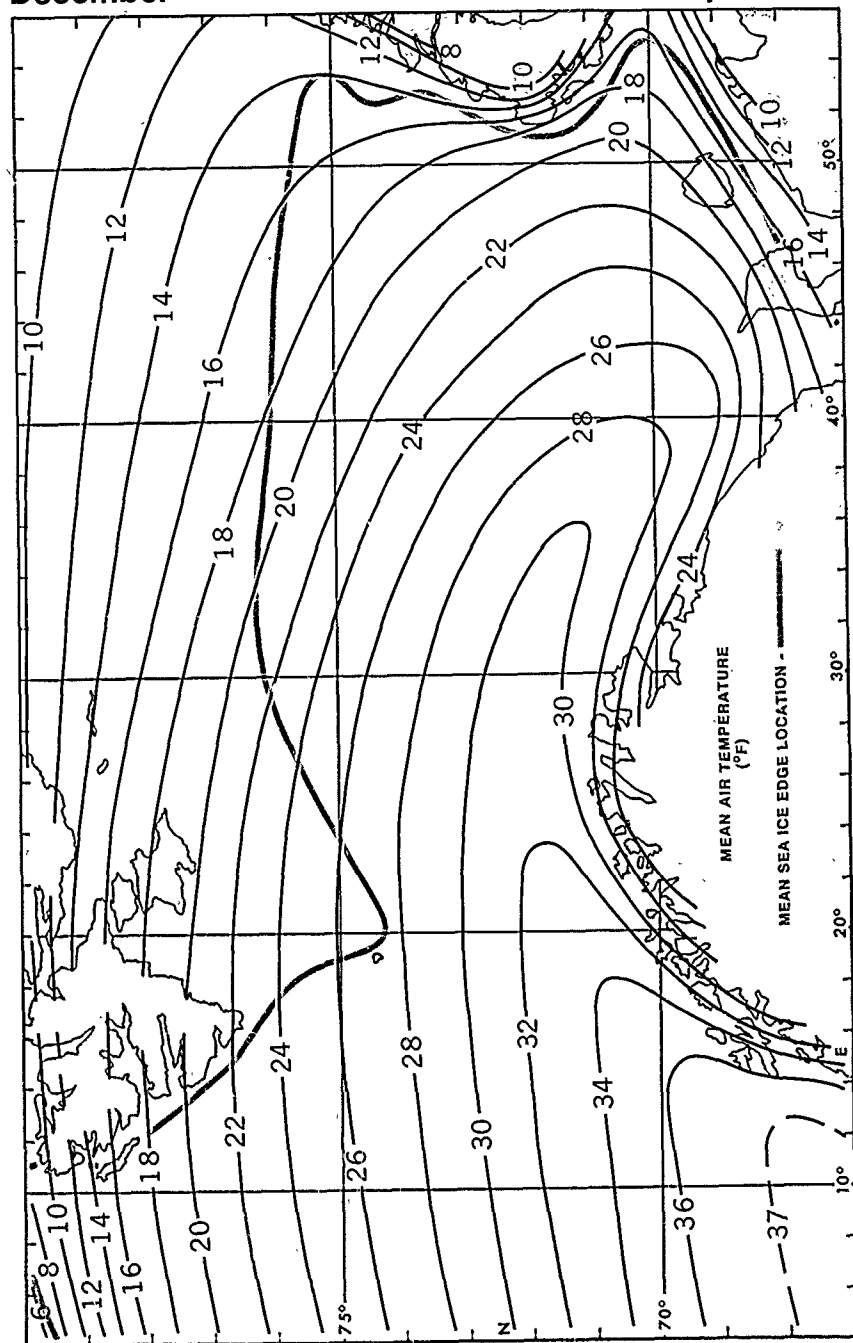
December

Surface Wind Roses



December

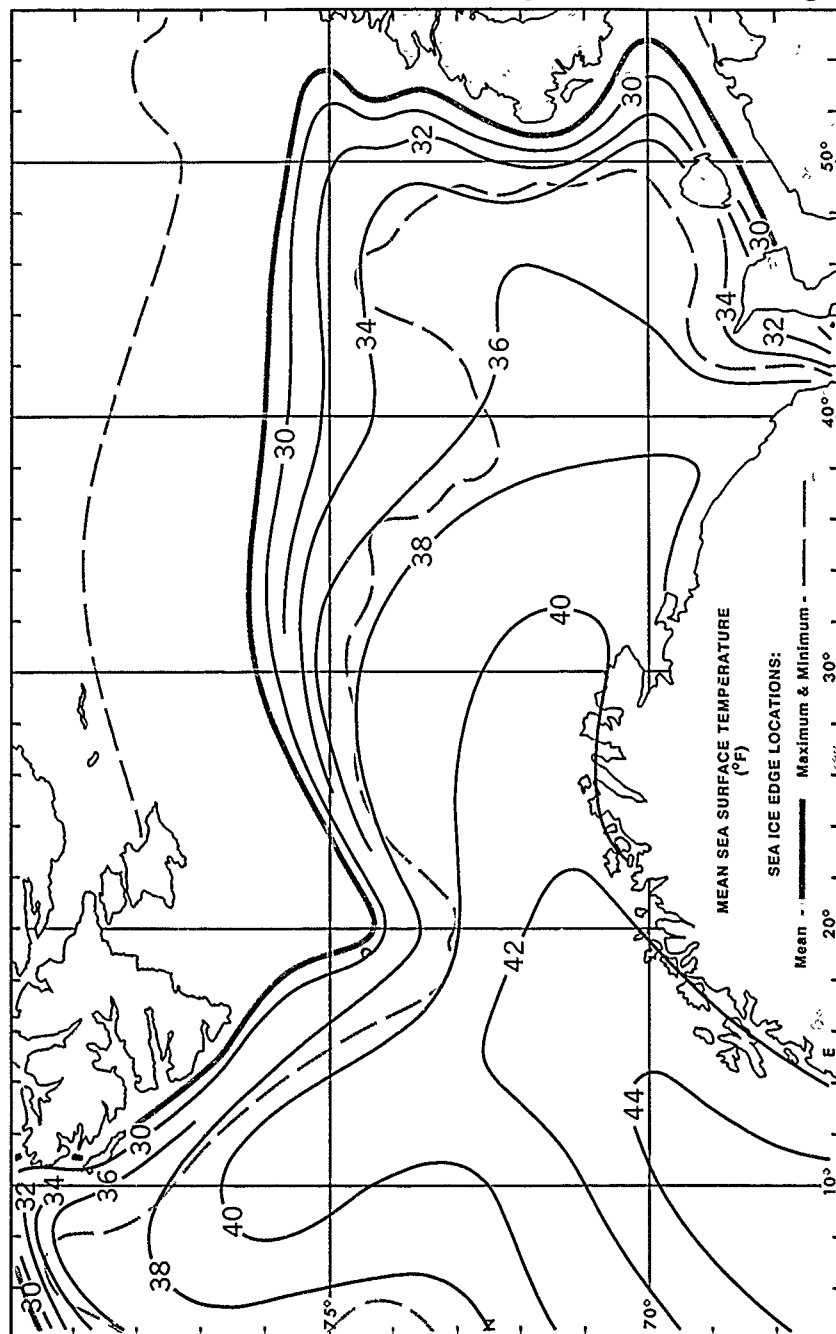
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

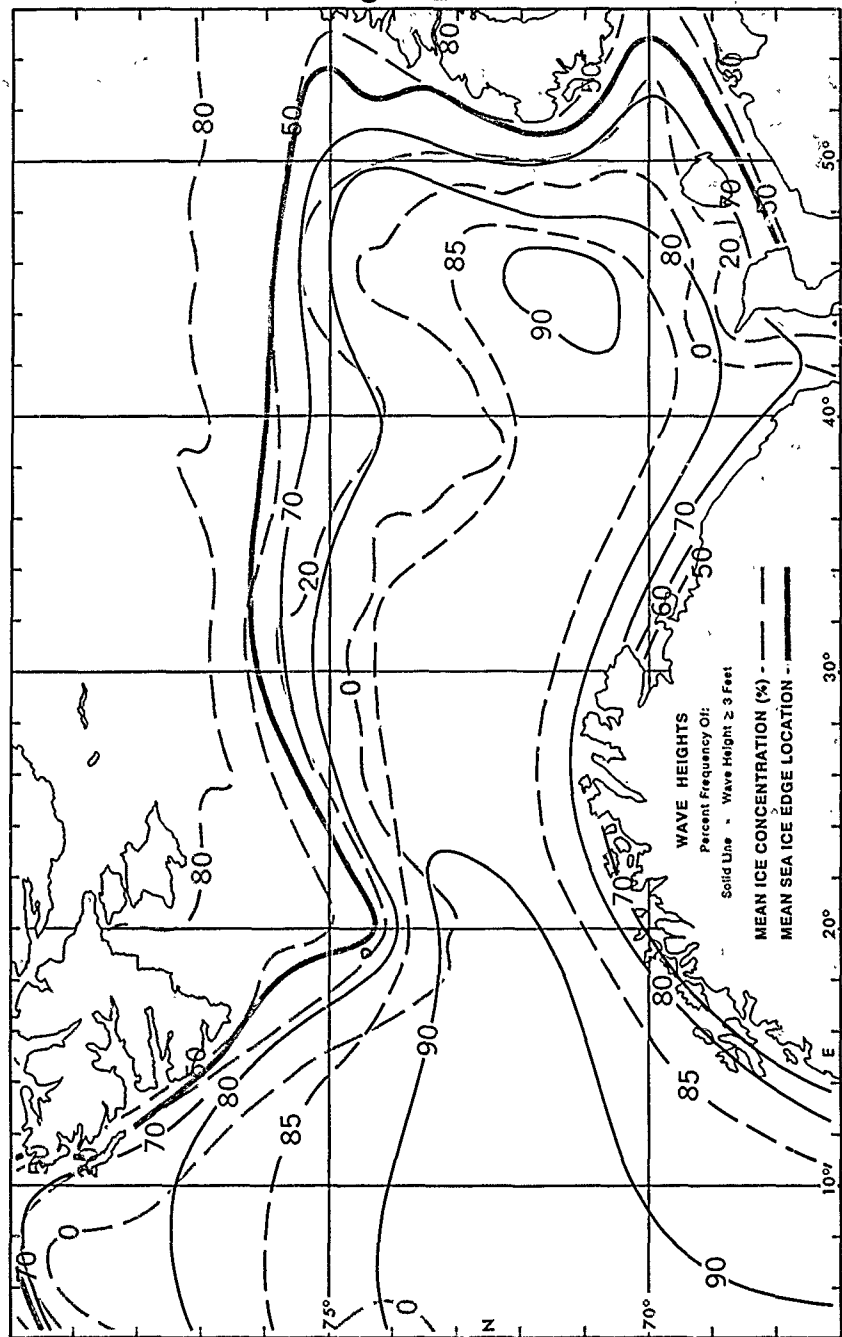
December

Mean Sea Temperature & Ice Edge



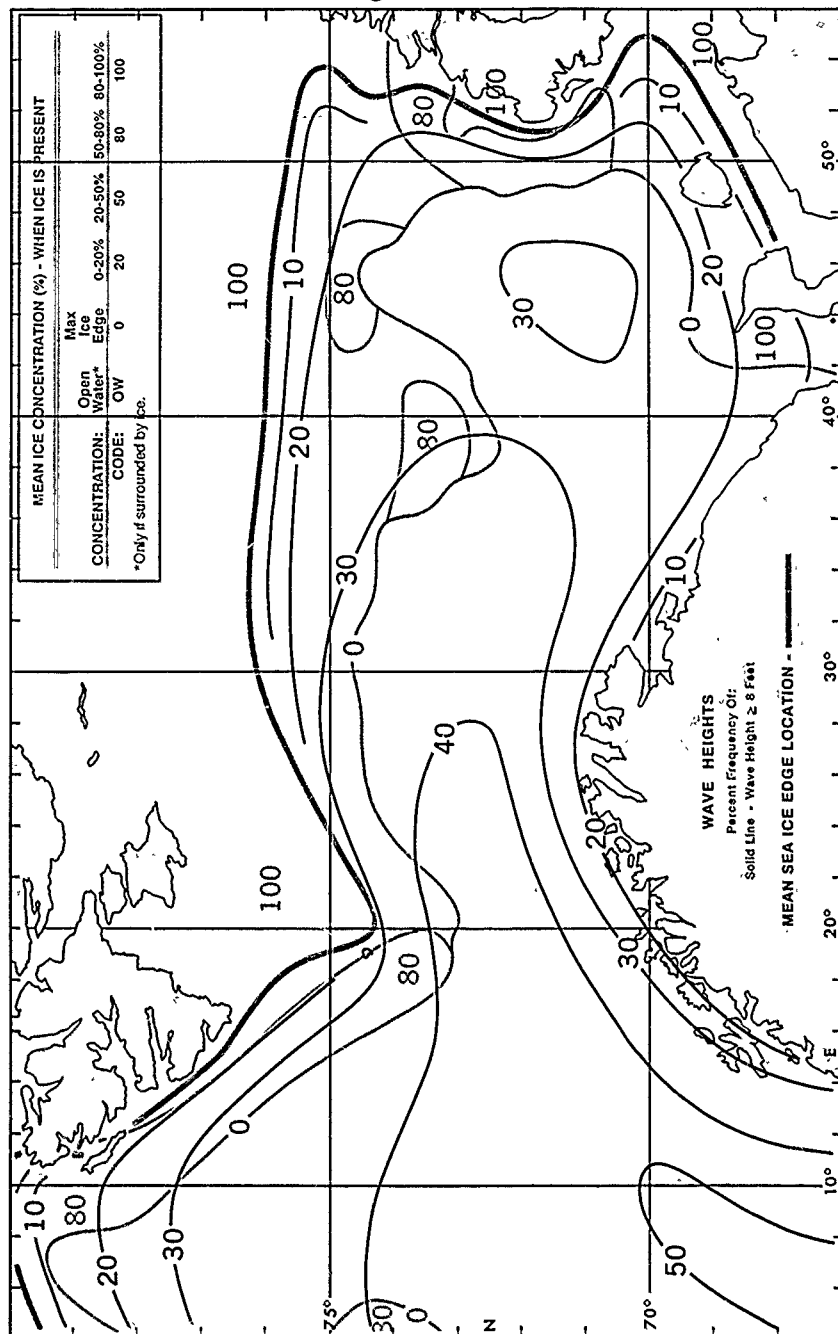
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December Wave Height ≥ 3 Ft. & Ice Concentration



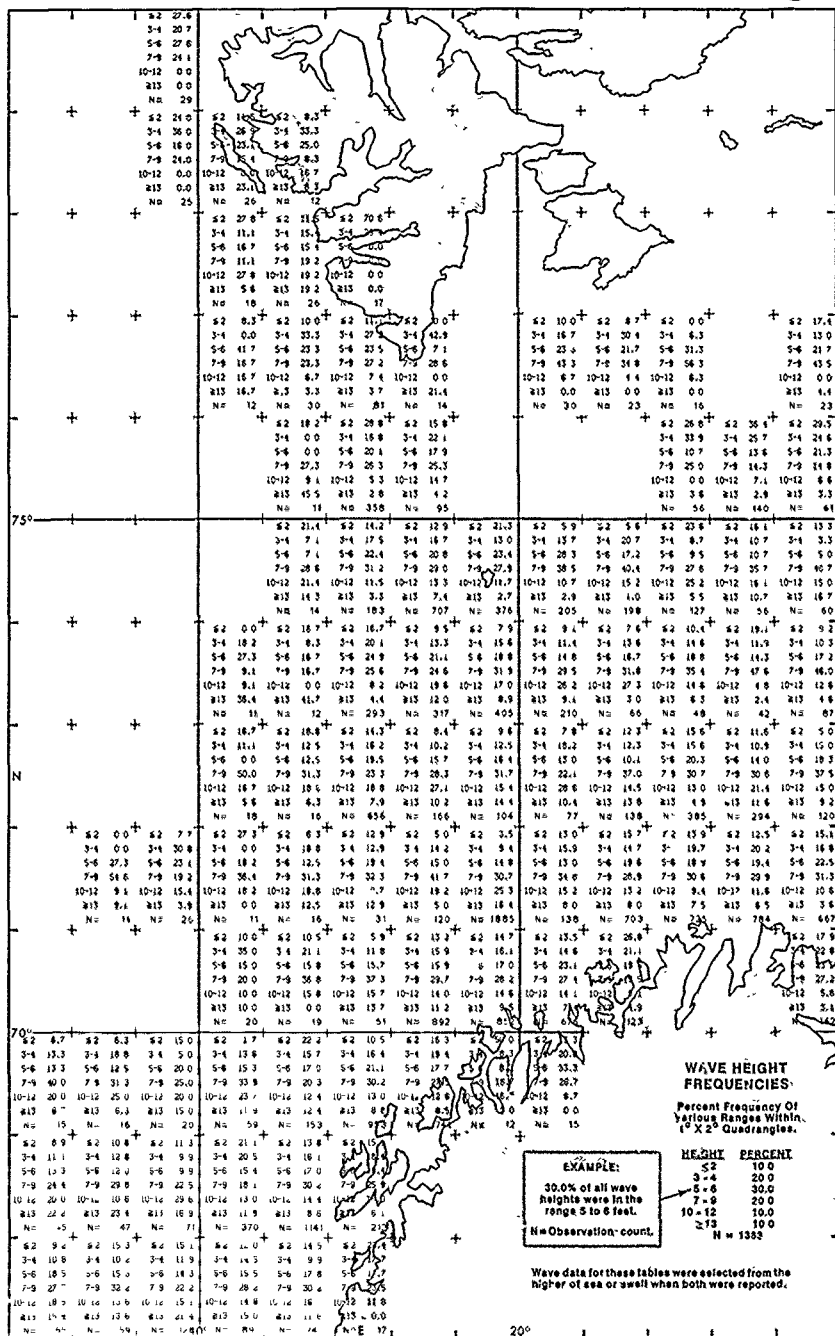
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December

Wave Height ≥ 8 Ft. & Ice Concentration

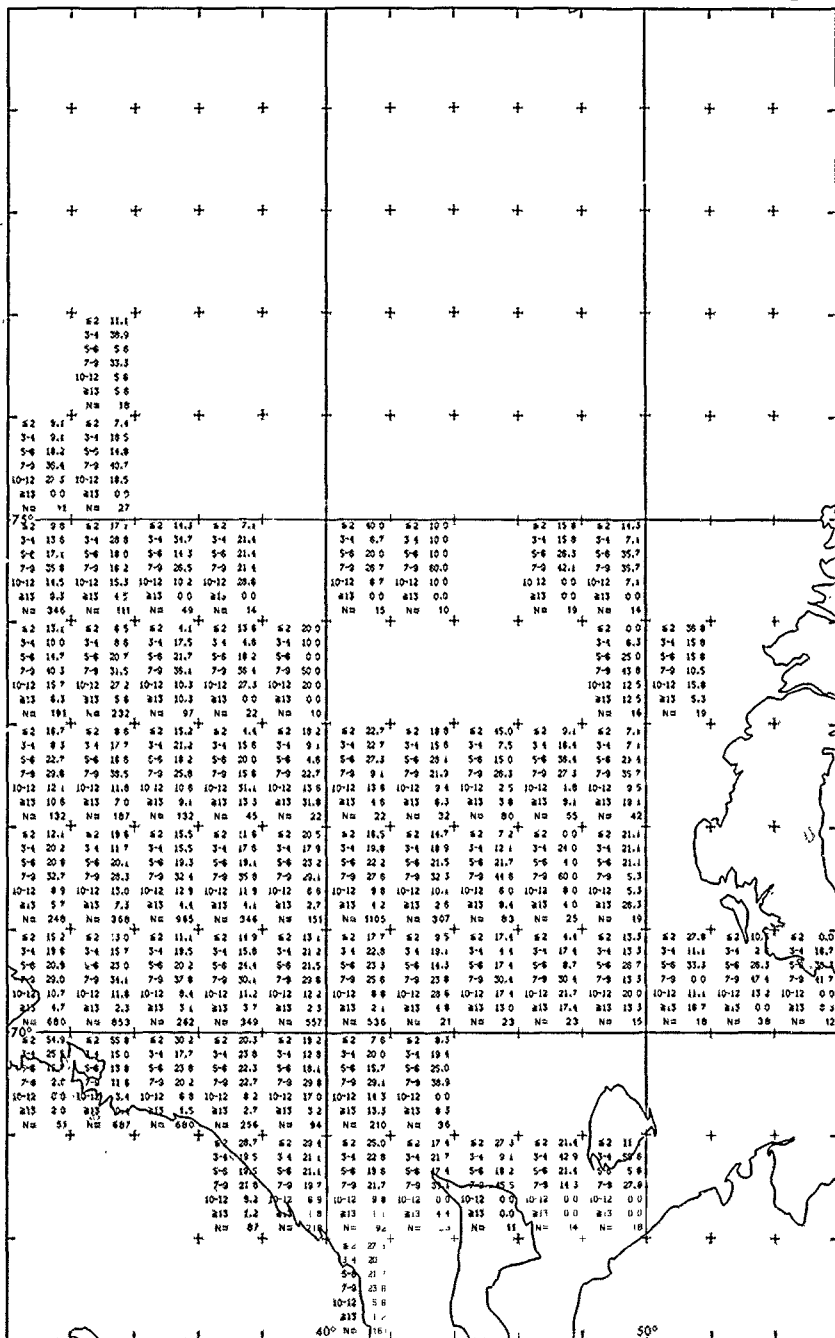
December

Wave Height



December

Wave Height



(Derived from hourly telecommunications data)

WMO NO. 01025: Tromsø/Langnes, Norway

LAT: 69°41'N

Longitude 18°55'E

ELEV: 33 FT

Period of record (hourly): 1973-1983

Period of record (daily): 1973-1989

[illegible][illegible]

NOTES:

- * Mean number of days < .5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- * The predominant sky condition
- * Visibility is not considered, most included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

NO. 2 (457)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# WINDS
CEILING LESS THAN 500 FEET AND VISIBILITY LESS THAN 5.00 MILES														
01	49	53	41	53	49	54	49	56	49	52	50	50	51	11
04	50	52	53	51	48	54	54	52	52	51	51	51	50	11
07	47	51	41	49	49	56	56	53	51	50	51	51	50	11
10	46	48	38	46	44	54	46	49	53	50	51	49	48	11
13	45	47	35	45	45	53	45	47	51	50	51	49	48	11
16	44	50	36	47	44	52	46	48	55	50	52	54	44	11
19	48	56	40	48	45	51	44	53	52	55	53	51	48	11
22	49	50	40	50	42	50	45	47	52	52	53	51	44	11
ALL	49	50	39	48	45	53	47	49	52	52	53	51	49	11

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	26	32	26	27	27	26	29	26	25	27	32	31	27	17
04	29	32	22	26	23	28	31	30	25	26	32	30	26	17
07	26	32	24	27	24	27	32	32	25	29	29	29	26	17
10	28	36	24	24	20	23	27	24	26	28	30	30	26	17
15	25	27	20	22	17	19	22	20	22	28	29	33	24	17
16	26	30	21	23	17	16	19	27	21	26	31	33	23	17
19	26	31	22	24	22	18	25	17	21	28	32	32	26	17
22	26	31	22	24	21	22	24	18	22	28	31	31	26	17
4LL	26	31	23	25	21	22	26	23	22	29	31	31	26	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	13	12	11	10	6	6	12	9	5	8	12	12	10	17
04	13	12	9	10	8	12	12	12	7	8	11	12	11	17
07	11	13	9	9	8	9	12	12	9	9	9	12	11	17
10	12	12	10	8	6	6	12	11	8	5	8	13	9	17
13	12	9	9	7	4	4	8	6	6	7	10	13	8	17
16	12	9	8	8	4	5	7	6	6	8	11	12	8	17
19	12	12	12	8	5	4	9	6	6	7	11	13	6	17
22	12	13	7	8	5	4	9	6	7	10	11	15	9	17
ALL	12	12	9	9	6	5	11	9	7	8	10	13	9	17

CEILING LESS THAN 500 FEET AND VISIBILITY LESS THAN 1.00 MILES

01	5	5	4	2	5	11	7	2	2	5	7	5	17	
04	5	5	2	3	4	11	10	5	3	4	6	6	17	
07	5	5	4	4	5	10	12	7	4	5	6	6	17	
10	6	7	4	4	2	4	8	5	4	3	7	5	17	
13	5	4	4	3	1	2	5	4	3	5	7	4	17	
16	6	5	3	6	2	2	4	3	3	5	4	7	4	17
19	6	5	3	7	1	2	6	4	3	3	5	6	4	17
22	5	4	7	2	1	8	4	2	3	4	5	4	17	
ALL	5	5	3	3	3	4	8	4	3	4	6	5	17	

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILES

01	5	2	1	1	1	1	2	1	0*	2	1	1	1*
04	2	2	1	1	1	1	2	2	1	2	2	2	1*
07	2	1	2	1	1	C*	1	2	0*	1	2	1	1*
10	1	3	2	1	0	0	1	2	1	0*	1	1	1
13	2	2	1	1	0	0	0	0*	0*	1	1	1	1*
16	2	2	1	2	0	0	0	C*	0*	1	1	1	1*
19	1	1	1	1	0	C*	1	0	C*	1	1	1	1*
22	2	C*	1	1	0*	0*	C*	1	C*	1	2	1	1*
ALL	2	2	1	1	1	C*	1	1	1	1	2	1	1*

NOTE 1
* 2 VALUE > 0 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

WMO NO. 01022: Bjornya Island, Norway
Period of record (hourly): 1973-1989

LAT: 74°31'78"

LONG 19°01'N

ELEV: 151 FT

Period of record (daily): 1973-1999

[illegible]

AGE	23	16	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536
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NOTES:

- # = Mean number of days < 5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- = The predominant sky condition
- * = Visibility is not considered, not included when reported
- & = Annual totals may differ from the sums of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

NO.	NO	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNU.	N. YES
00	00	REGULAR LESS THAN 5000 FEET CATER MOBILITY LESS THAN 5000 MILES												
01	06	75	70	72	80	80	86	82	83	78	68	76	76	17
02	07	75	73	71	82	82	86	82	78	80	72	77	77	17
03	08	75	73	70	81	80	84	81	78	79	65	77	71	17
10	07	71	69	69	77	78	85	77	82	77	61	63	76	17
11	07	71	69	69	74	73	82	76	76	77	63	73	72	17
13	08	72	69	67	78	76	82	77	77	78	77	68	76	17
19	09	72	73	69	78	80	82	79	78	81	78	68	75	17
27	07	75	72	71	79	81	85	82	82	81	69	77	76	17
41L	07	73	71	70	79	78	84	80	80	79	67	76	73	17

DEPTHS LESS THAN 3000 FEET OR VISIBILITY LESS THAN 3.00 MILES

01	51	40	57	61	46	69	70	75	75	70	66	51	65	17
04	52	59	58	60	68	69	60	76	76	71	68	53	66	17
07	53	62	61	59	65	68	60	76	72	68	68	50	65	17
10	53	61	60	59	63	67	79	65	73	66	68	49	65	17
13	51	61	60	59	64	59	77	68	66	68	65	52	65	17
16	53	58	60	58	65	62	79	68	67	68	65	52	65	17
19	53	61	60	59	63	66	76	72	71	71	60	52	65	17
22	51	60	60	61	65	67	61	73	75	69	68	53	65	17
ALL	52	60	60	60	65	66	79	72	72	68	67	52	66	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

C1	25	29	29	29	33	43	62	51	42	31	31	24	34	17
C4	23	29	30	31	33	39	63	54	44	32	31	25	36	17
O7	24	30	30	31	33	39	63	52	47	32	31	23	37	17
10	27	40	37	28	30	37	61	47	43	33	25	21	37	17
11	25	38	34	32	29	31	58	44	44	33	25	25	36	17
16	25	35	36	30	31	35	59	41	45	34	34	24	36	17
19	25	35	34	31	29	37	60	43	43	34	36	24	35	17
22	26	33	33	33	33	38	65	47	46	32	29	23	37	17
ALL	25	33	34	33	33	37	61	47	44	33	33	24	36	17

CEILING LESS THAN 500 FEET AND VISIBILITY LESS THAN 1.00 MILE

01	8	10	10	8	16	21	96	32	25	12	9	7	17	1
04	8	10	10	9	15	26	46	35	24	12	10	6	17	1
07	7	10	10	8	15	19	42	34	27	16	9	7	17	1
10	8	12	10	7	12	17	41	28	27	13	10	6	14	1
13	7	12	9	9	11	34	36	29	25	7	16	10	7	1
16	7	11	9	9	11	15	36	28	25	13	6	7	15	1
19	7	9	11	7	15	18	40	27	26	13	6	7	15	1
22	9	9	11	8	14	19	43	28	24	10	8	6	14	1
25	8	11	10	8	13	18	41	30	28	14	9	7	16	1

CEILING LESS THAN 200 FEET C/RD VISIBILITY LESS THAN 3/4 MILE

01	7	6	9	5	10	22	25	16	15	6	5	4	10	1
04	7	9	5	6	13	25	21	22	7	7	5	10	1	
07	7	9	5	7	7	22	19	15	7	5	6	10	1	
10	8	9	7	4	7	21	16	12	4	5	9	1		
13	7	10	6	6	7	16	14	15	6	5	6	9	1	
16	6	9	6	5	7	4	17	14	13	6	5	6	9	1
19	6	8	6	6	9	11	20	15	13	6	6	6	9	1
22	6	8	9	5	10	10	23	15	14	6	5	10	1	
ALL	7	9	8	5	8	10	21	16	14	6	5	6	9	1

NOTE 1
* Z VALUE > 0 AND < 0.5 PERCENT

STATION CLIMATIC SUMMARY

(Derived from hourly telecommunications data)

WMO NO. 01052: Hopen Island, Norway

LAT: 76°30'N

LOH: 25°04'E

ELEV: 103 Ft

Period of record (hourly): 1973-1989

Period of record (daily): 1973-1989

TEMPERATURE										PRECIPITATION									
MAX										MIN									
1										1									
2										2									
3										3									
4										4									
5										5									
6										6									
7										7									
8										8									
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(Derived from hourly telecommunications data)

WHO NO. 01098: Vardo, Norway

LAT: 70°22'N

LON: 31°06'E

FI EV-161 F1

Period of record (hourly): 1973-1939

Period of record (daily): 1973-1989

[illegible]

519	26	23	23	-2	88	86	-10	19	16C	56	17	95	090	C	0	20	3	0	20	C	21	0	3	0	19	#	15
518	26	23	23	-2	87	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
517	26	23	23	-2	86	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
516	26	23	23	-2	85	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
515	26	23	23	-2	84	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
514	26	23	23	-2	83	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
513	26	23	23	-2	82	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
512	26	23	23	-2	81	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
511	26	23	23	-2	80	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
510	26	23	23	-2	79	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
509	26	23	23	-2	78	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
508	26	23	23	-2	77	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
507	26	23	23	-2	76	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
506	26	23	23	-2	75	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
505	26	23	23	-2	74	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
504	26	23	23	-2	73	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
503	26	23	23	-2	72	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
502	26	23	23	-2	71	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
501	26	23	23	-2	70	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
500	26	23	23	-2	69	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
499	26	23	23	-2	68	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
498	26	23	23	-2	67	86	-10	19	15C	56	17	99	090	C	0	20	#	2	0	16	C	17	0	3	#	15	
497	26	23	23	-																							

NOTES:

- # = Mean number of days < 5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, first included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

JUN 68 JUL 68 AUG 68 SEP 68 OCT 68 NOV 68 DEC 68 JAN 69 FEB 69 MAR 69 APR 69 MAY 69 JUN 69

CEILING LESS THAN 5000 FEET AND/OR VISIBILITY LESS THAN 5.00 MILES

21	74	71	66	63	62	63	59	67	67	71	71	76	67	17
20	76	72	66	63	61	60	67	67	65	69	66	71	66	17
27	73	71	64	57	59	63	61	62	63	64	68	72	65	17
10	70	60	57	57	56	60	60	58	62	64	66	67	62	17
13	70	63	56	62	57	55	59	61	58	62	65	68	61	17
16	70	66	56	62	57	58	57	63	58	60	69	76	63	17
19	73	66	61	63	58	58	57	67	66	69	72	76	65	17
22	77	66	61	63	61	60	59	67	65	65	72	76	65	17
ALL	73	67	60	61	59	58	59	64	62	62	68	72	68	17

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

21	44	44	43	54	55	54	54	59	61	64	54	44	61	17
CA	44	44	40	55	53	53	57	59	54	63	61	65	40	17
27	44	44	54	51	54	57	47	54	53	54	60	44	54	17
1G	41	51	52	50	51	52	54	58	51	54	56	42	54	17
13	42	58	48	55	48	50	54	56	52	51	58	40	54	17
16	41	58	49	56	51	51	52	56	52	59	54	40	54	17
19	44	51	54	57	51	53	57	59	61	61	46	46	54	17
22	44	41	54	57	54	53	54	51	54	61	42	46	54	17
41E	44	40	54	55	52	53	54	58	56	52	41	44	57	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

D1	24	21	20	15	16	22	28	26	15	14	18	26	20	1
G6	24	21	22	20	17	21	30	26	17	12	16	22	21	1
07	24	22	21	16	6	22	29	19	26	17	19	22	21	1
IU	22	21	18	17	15	19	28	21	19	13	19	24	20	1
13	26	24	19	21	14	19	27	19	16	13	22	25	20	1
16	23	22	16	18	15	19	27	20	16	14	19	27	20	1
18	24	21	23	20	18	16	24	22	16	13	20	27	20	1
22	24	23	20	17	17	19	27	25	12	18	27	20	20	1
ALL	24	22	20	18	16	20	27	22	17	12	19	25	20	1

CEILING LESS THAN 500 FEET &/OR VISIBILITY LESS THAN 1.00 MILES

04	7	6	4	3	4	11	18	13	5	2	3	9	7	1
05	5	6	5	4	7	11	18	15	5	2	5	5	7	1
07	4	6	5	4	10	17	12	7	4	6	6	7	1	1
10	7	8	2	5	4	18	11	7	2	6	5	7	1	1
13	8	7	5	8	4	10	16	9	6	2	6	7	7	1
16	7	7	3	5	5	8	16	12	5	2	6	8	7	1
19	4	8	5	5	4	6	15	12	4	2	6	6	6	1
22	6	7	5	3	6	9	17	12	4	2	6	9	7	1
ALL	6	7	4	4	5	9	17	12	5	2	6	7	7	1

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILE

01	5	4	2	2	3	5	8	8	3	00	2	7	4	1
04	4	5	3	2	4	4	8	2	2	1	3	4	3	1
07	4	4	5	2	4	4	9	5	2	00	2	5	3	1
10	4	7	1	3	1	2	7	4	3	1	4	4	4	1
13	6	7	4	3	1	3	6	3	2	1	4	3	4	1
16	4	5	3	2	2	3	4	2	00	3	4	4	4	1
19	4	6	3	2	2	3	7	5	2	00	2	5	3	1
22	4	5	3	1	3	7	6	1	1	00	3	4	4	1
ALL	5	5	3	2	2	4	7	6	7	1	3	4	4	1

NOTE 3
* IF VALUE > 0 AND < 100 PERCENT

STATION CLIMATIC SUMMARY

(Derived from hourly telecommunications data)

WMO NO. 01152: Bodo, Norway

LAT: 67°16'N

LON: 14°22'E

ELEV: 141 Ft

Period of record (hourly): 1973-1989

Period of record (daily): 1973-1989

TEMPERATURE (DEG F) (REL HUMIDITY) (DEW PT) (WIND) (GUST) (TIME)												PRECIPITATION (INCHES) (TYPE) (DURATION) (TIME)												MEAN NO. OF DAYS WITH (C)												OTHER TO VISION (C)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP		OCT		NOV		DEC		TOTAL		TYPE		DURATION		TIME		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C		C</	

NOTES:

- # - Mean number of days < .5 days
- \$ - Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + - The predominant sky condition
- * - Visibility is not considered, most included when reported
- & - Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

WIND	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
CEILING LESS THAN 5000 FEET &/OR VISIBILITY LESS THAN 5.00 MILES														
01	49	54	42	49	44	51	56	53	4	53	53	51	51	17
04	52	54	42	51	44	53	57	53	4	50	54	50	51	17
07	51	53	42	47	43	52	55	51	54	53	54	51	50	17
10	50	51	42	45	38	48	55	46	50	51	52	47	47	17
13	51	49	36	41	36	48	52	41	50	52	52	48	46	17
16	51	49	36	44	41	44	52	46	49	53	54	51	47	17
19	51	51	37	45	41	45	54	48	52	54	53	51	49	17
22	50	54	39	48	43	49	53	51	53	54	52	52	50	17
ALL	51	52	39	46	41	49	54	49	52	53	53	51	49	17

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

WIND	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
01	40	41	29	35	25	30	36	30	31	36	36	38	34	17
04	41	41	28	34	24	31	37	33	33	39	39	35	32	17
07	39	39	29	33	23	31	37	32	33	32	37	38	34	17
10	39	39	25	28	23	30	33	28	28	33	35	40	32	17
13	40	38	25	28	21	27	32	23	30	34	35	37	31	17
16	38	36	24	29	25	24	30	25	27	34	37	42	31	17
19	39	39	27	31	24	25	32	26	27	34	38	38	32	17
22	39	39	26	34	24	28	30	29	27	34	35	39	32	17
ALL	39	39	27	32	24	28	33	28	30	34	37	39	32	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

WIND	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
01	17	18	10	13	9	15	18	11	7	9	12	13	11	17
04	16	17	11	12	10	14	19	13	10	9	12	14	13	17
07	16	15	12	13	9	14	19	14	8	8	12	14	13	17
10	15	15	12	13	9	14	19	14	8	8	12	14	13	17
13	17	17	10	10	7	8	14	10	6	9	11	15	12	17
16	14	14	9	10	9	15	15	9	6	10	13	14	11	17
19	15	15	9	10	8	10	14	10	6	10	12	13	11	17
22	15	16	11	12	9	11	16	11	6	10	10	15	12	17
ALL	16	16	11	11	9	12	17	11	7	9	12	15	12	17

CEILING LESS THAN 500 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

WIND	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
01	7	7	4	5	4	9	11	7	3	4	4	4	4	17
04	7	6	4	5	4	9	15	10	5	3	4	4	4	17
07	7	6	4	5	4	9	15	10	5	3	4	4	4	17
10	7	6	4	5	4	9	11	7	3	4	4	4	4	17
13	8	10	6	6	3	5	10	7	4	5	7	6	7	17
16	7	6	5	5	5	6	10	6	4	5	6	5	6	17
19	6	7	3	4	5	6	9	6	3	4	4	9	6	17
22	6	5	5	6	4	7	10	6	3	3	3	4	5	17
ALL	7	7	5	6	4	7	11	7	3	4	4	6	6	17

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILES

WIND	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
01	3	3	2	1	1	2	2	1	1	1	1	2	2	17
04	3	3	1	1	1	2	3	2	2	0*	1	2	2	17
07	3	3	2	1	0*	2	3	2	1	1	2	4	2	17
10	3	3	2	1	1	0*	2	1	1	0*	1	3	3	17
13	4	4	2	1	1	0	2	0*	1	1	2	4	2	17
16	3	2	1	1	1	0*	2	1	0*	1	1	2	1	17
19	3	3	1	1	1	1	1	0*	0*	0*	0*	1	1	17
22	2	2	1	1	1	2	1	1	0*	0*	1	2	1	17
ALL	3	3	2	1	1	1	2	1	1	1	1	3	2	17

NOTE 1
* VALUE > 0 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

LAT: 80°37'N

ELEV: 66 Ft

Period of record (daily): 1973-1989

[illegible]

- ♂ = Mean number of days < .5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, must included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

MONTH ESTD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	N YRS
	CEILING LESS THAN 5000 FEET 6/10 VISIBILITY LESS THAN 5.00 MILES													
01	43	48	40	35	65	74	70	76	81	59	44	57	17	17
04	43	45	41	35	62	75	72	76	80	60	43	45	57	23
07	46	48	39	39	57	67	68	74	79	58	54	47	59	24
10	43	47	45	34	59	69	64	75	80	61	44	43	56	17
13	43	48	41	32	56	69	68	69	78	59	44	46	56	17
16	45	44	41	34	56	67	67	74	76	60	44	45	57	17
19	42	44	41	35	60	70	72	72	78	61	43	42	55	22
22	44	45	41	35	64	71	73	82	58	42	42	42	56	17
ALL	44	45	41	35	63	71	69	74	78	60	43	43	56	17

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	37	39	33	29	55	67	66	70	76	48	36	39	50	17
04	35	36	34	29	54	68	66	66	72	50	38	37	49	17
07	37	40	31	30	57	67	64	65	72	50	33	37	49	17
10	36	40	35	28	52	63	63	68	72	53	35	34	46	17
13	36	41	32	25	50	64	64	63	72	51	37	36	48	17
16	37	38	30	26	51	60	61	66	71	50	36	36	47	17
19	36	36	23	10	54	62	67	65	73	51	36	34	48	17
22	38	38	31	30	58	65	65	67	74	47	35	33	49	17
25	36	38	31	28	58	65	65	67	73	50	36	38	49	17
ALL	36	38	31	28	58	65	65	67	73	50	36	38	49	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	23	23	23	21	18	17	19	34	36	35	20	18	25	24	13
04	22	22	22	17	15	16	14	34	34	20	19	23	24	24	13
07	24	23	20	19	15	19	39	32	31	20	20	23	24	14	13
10	24	24	23	18	19	19	32	33	30	22	19	22	24	14	13
13	23	28	23	16	15	18	31	28	29	22	19	21	23	14	13
16	24	25	21	15	14	17	31	30	31	20	19	20	22	14	13
19	22	21	22	16	14	17	34	31	36	18	21	20	23	14	13
22	22	24	19	18	14	21	35	33	34	16	19	20	23	14	13
25	23	24	21	17	16	19	39	32	33	20	19	22	23	14	13

CEILING LESS THAN 500 FEET 4/OR VISIBILITY LESS THAN 1.00 MILES

01	9	9	5	6	3	6	19	18	16	7	6	9	10	1
04	8	7	6	4	4	5	19	18	16	6	8	9	9	1
07	10	11	6	5	3	5	20	15	15	6	6	7	9	1
10	9	8	6	6	3	5	14	13	12	7	7	8	9	1
13	9	6	6	4	3	6	15	13	13	6	7	9	8	1
16	9	9	7	4	3	6	13	15	13	7	6	8	8	1
19	8	7	8	4	3	6	13	15	15	7	9	8	9	1
22	7	7	5	3	5	5	18	14	9	5	5	8	9	1
ALL	9	8	7	5	3	6	16	15	14	7	7	8	9	1

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILES

01	6	4	3	6	1	2	9	8	3	1	2	4	4	1
04	5	4	3	2	2	9	7	6	1	2	3	4	1	
07	7	6	5	2	1	5	8	7	5	1	3	4	1	
10	4	5	6	9	1	1	5	6	4	2	3	4	1	
13	6	5	4	2	2	2	6	5	4	1	3	4	1	
16	5	6	4	2	2	2	6	5	4	2	2	4	1	
19	4	4	3	6	2	1	5	6	7	4	3	4	1	
22	4	3	5	3	1	5	6	7	4	1	2	3	1	
ALL	5	5	4	3	1	2	7	6	4	1	2	3	1	

* Z VALUE > 0 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

LAT: 78°04'N

ELEV: 161 Ft

Period of record (daily): 1973-1989

& * Annual totals may differ from the sum of the monthly values because of rounding.

224

STATION CLIMATIC SUMMARY

(Derived from hourly telecommunications data)

WMO NO. 20744: Malye Karmakuly, USSR

LAT: 72°23'N

LON: 52°44'E

ELEV: 52 Ft

Period of record (hourly): 1973-1989

Period of record (daily): 1973-1989

TEMPERATURE (C) OF FIRE										HUMIDITY (PERCENT)										P.W. IN (INCHES)										TOTAL PRECIPITATION										MEAN NO. OF DAYS WITH (PERCENT)										OBSERVATIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
MEANS										EXPERIMENTAL										TEMPERATURE										ALTITUDE										ISLAND										TEMP (C) OF F										PRECIPITATION										OBSERVATIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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JAN	9	0	5	33	-31	78	78	-04	0	165	5	25	70	0VR	0	20	11	1	#	17	0	17	#	2	#	0	#	23		FEB	9	0	5	35	-29	77	78	-03	0	145	5	25	68	0VR	0	18	10	1	#	17	0	17	#	2	#	0	#	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
MAR	17	2	12	44	-21	75	74	-05	5	105	5	27	66	0VR	0	22	7	1	#	16	0	16	#	3	0	15	#	17		APR	28	21	25	46	-14	79	79	-10	19	40	12	40	66	0VR	0	20	10	1	#	17	0	19	#	5	0	9	#	14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
MAY	37	35	35	47	-11	80	80	-17	10	10	12	40	66	0VR	0	20	10	1	#	16	0	16	#	1	0	14	#	9		JUN	49	41	45	48	-31	81	82	-24	39	70	10	40	52	0VR	2	13	1	0	13	0	1	0	13	0	0	9	#	14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
JUL	47	43	46	72	-22	82	80	-24	39	70	10	40	52	0VR	3	9	1	0	14	0	1	0	16	9	0	0	0	#	9		AUG	47	43	46	72	-22	82	80	-24	39	70	10	40	52	0VR	3	9	1	0	14	0	1	0	16	9	0	0	#	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
SEP	30	24	27	46	-11	82	82	-12	12	135	52	16	52	0VR	0	24	6	1	0	15	0	19	0	4	#	7	#	11		OCT	35	24	18	35	-11	82	82	-12	12	135	52	16	52	0VR	0	24	6	1	0	15	0	19	0	4	#	7	#	11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
NOV	46	36	31	36	-31	78	78	-05	5	105	5	27	66	0VR	0	20	11	1	#	16	0	16	#	3	0	15	#	17		DEC	35	19	23	48	-33	60	60	-18	130	5	20	72	0VR	2	27	21	50	74	1	152	1	208	3	67	#	66	1	188																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
APR	27	17	17	17	17	11	15	15	15	15	15	15	15	17	12	17	17	17	14	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

NOTES:

- * = Mean number of days < 5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, mist included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

GROUP (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# OBS
	CEILING LESS THAN 5000 FEET <OR> VISIBILITY LESS THAN 5.00 MILES													
02	50	53	61	47	67	72	57	61	71	58	56	56	59	17
05	53	53	65	45	68	70	54	58	64	57	56	56	59	17
08	53	51	57	43	63	68	53	61	65	60	62	59	59	16
11	54	57	56	40	61	69	50	59	66	61	62	58	57	17
14	53	53	59	55	62	61	66	57	67	61	62	56	57	17
17	51	52	57	45	59	64	51	58	72	61	58	56	57	17
20	51	50	57	46	65	67	55	61	68	57	55	58	57	17
23	50	51	51	58	65	63	56	62	71	56	58	58	57	17
ALL	52	51	58	44	63	68	57	60	66	59	59	57	57	17

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES														
02	43	47	56	42	61	65	53	95	43	50	50	46	53	17
05	48	52	58	43	63	66	51	52	59	55	50	50	54	17
08	46	52	58	40	63	65	55	58	51	53	53	53	53	17
11	51	47	51	36	55	67	45	55	55	48	51	53	51	23
14	48	57	51	37	57	62	44	52	59	50	54	53	51	23
16	46	55	53	42	56	67	53	53	63	43	51	51	51	23
20	46	43	53	41	60	63	50	59	60	46	49	50	51	17
23	45	43	54	40	54	64	52	56	60	46	48	51	51	17
27	47	45	54	39	59	64	54	54	60	50	51	51	51	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES														
02	25	23	30	20	17	29	29	20	34	10	19	22	21	17
05	28	24	33	20	17	29	29	16	21	12	20	22	23	17
08	29	25	34	20	19	27	25	16	14	13	23	23	23	17
11	28	25	32	22	16	23	24	14	14	14	23	22	21	17
14	24	24	37	21	17	22	22	16	15	13	20	22	21	17
17	23	23	30	21	16	24	22	16	12	12	19	24	20	17
20	23	23	31	20	19	26	25	17	15	11	21	23	21	17
23	23	23	31	21	18	20	26	17	18	10	22	24	22	17
26	23	23	31	20	18	26	25	17	16	11	21	23	21	17
ALL	25	23	31	20	18	26	25	17	16	10	22	24	22	17

CEILING LESS THAN 500 FEET &/OR VISIBILITY LESS THAN 3.00 MILES												
02	8	8	8	7	13	17	9	5	3	5	7	8
05	10	8	10	6	24	27	7	8	3	7	9	17
08	11	8	13	8	15	17	7	5	3	6	8	17
11	11	10	12	9	7	12	12	6	5	3	7	8
14	10	12	11	7	5	10	11	7	5	3	7	8
17	10	10	11	7	5	12	12	7	6	4	9	8
20	10	11	13	7	7	13	15	7	6	4	9	8
23	8	9	12	6	7	12	17	8	6	3	6	7
26	8	9	12	8	6	12	18	7	6	3	7	8
ALL	10	9	12	8	6	12	18	7	6	3	7	8

CEILING LESS THAN 200 FEET 6/OR VISIBILITY LESS THAN 3/4 MILES														
02	6	5	6	4	5	8	11	6	3	2	3	5	5	17
05	5	5	7	4	5	8	9	3	7	2	4	5	5	17
08	7	5	7	4	5	6	5	4	3	1	4	6	5	17
11	7	7	7	6	4	6	5	4	3	1	4	6	5	17
14	7	7	7	6	4	6	5	3	4	1	5	5	5	17
17	7	7	7	6	4	6	5	3	3	1	4	5	5	17
20	7	6	6	5	3	5	4	4	3	1	5	4	5	17
23	7	6	6	5	4	7	9	4	5	3	5	5	5	17
26	6	6	7	4	5	7	4	10	5	4	3	5	5	17
ALL	7	6	7	5	4	7	8	4	4	1	4	5	5	17

NOTE 1
* Z VALUE > 0 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

LAT: 68°58'N

LON: 33°03'E

ELEV: 151 Ft

Period of record (daily): 1973-1989

[illegible][illegible]

NOTES:

- # = Mean number of days < .5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, mist included when reported
- & = Annual total may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

(GROUP)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	N OBS
CEILINGS LESS THAN 5000 FEET < 60% VISIBILITY LESS THAN 5.00 MILES														
01	62	55	55	49	57	57	64	62	60	67	63	65	59	17
02	61	54	53	54	61	61	62	60	60	67	66	71	62	17
07	65	58	66	59	61	68	62	69	72	67	69	69	68	16
10	65	60	64	51	58	64	59	69	70	69	73	69	66	15
13	64	54	55	47	59	64	59	70	68	68	69	69	62	17
16	64	54	64	57	59	64	59	70	67	68	68	72	63	16
19	61	54	62	44	55	60	57	64	69	67	67	59	67	15
22	64	53	57	45	52	56	51	58	62	69	64	64	57	15
ALL	64	55	55	49	57	58	62	60	67	66	67	68	61	16

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	51	47	44	39	44	46	45	48	44	54	54	57	48	57
02	47	47	47	43	46	47	47	51	46	55	59	41	50	51
07	53	47	52	52	50	53	52	58	57	57	62	60	55	57
10	56	50	56	45	49	55	54	63	58	61	64	59	56	57
13	58	45	47	41	50	52	49	57	58	58	62	61	53	57
16	57	42	39	40	46	51	46	58	53	59	58	61	53	57
19	52	45	35	36	43	50	46	52	50	57	58	49	50	57
22	54	42	37	31	42	47	46	46	46	59	55	48	46	57
All	54	46	45	41	46	50	46	54	52	57	59	59	51	57

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	23	14	14	10	10	9	12	8	7	12	19	25	14	1
04	24	14	15	13	12	14	12	10	11	22	25	14	1	
07	21	14	21	20	15	13	20	19	15	13	24	19	1	
10	25	24	20	19	8	10	13	14	14	19	23	24	19	
13	31	24	23	14	7	8	7	7	8	16	29	31	17	
16	34	21	14	8	6	6	5	5	14	22	32	15	1	
19	24	22	12	11	4	5	7	4	15	22	24	13	1	
22	29	17	12	10	5	6	7	4	5	11	21	24	1	
25	24	20	14	13	9	8	11	10	9	14	23	21	1	

CEILING LESS THAN 500 FEET AND VISIBILITY LESS THAN 3.00 MILES

01	7	4	3	1	2	2	2	2	1	2	6	5	3	1
04	6	5	5	2	2	3	6	2	3	6	5	5	4	1
07	7	3	6	4	4	3	5	6	5	5	6	7	5	1
10	7	3	6	2	2	1	3	3	6	6	6	7	4	3
13	7	5	2	2	2	1	1	1	1	4	6	9	3	1
16	6	3	2	1	0*	1	0*	0*	2	3	7	9	3	1
19	6	4	2	1	1	1	1	1	1	3	5	6	3	1
22	6	4	2	2	2	1	1	1	1	2	5	7	3	1
ALL	6	4	3	2	2	2	2	2	2	6	6	7	6	1

CEILING LESS THAN 400 FEET AND/OR VISIBILITY LESS THAN 3/4 MILE

01	5	3	3	1	2	1	1	2	2	4	2	1
04	4	4	4	1	1	0*	1	2	1	4	2	1
07	5	2	4	4	3	1	2	4	5	4	3	1
10	4	2	5	2	1	0*	0*	2	4	5	3	1
13	5	4	2	1	1	0*	0	0	1	3	5	2
16	5	3	1	1	0	1	0*	0	1	3	5	2
19	3	4	1	1	1	0*	0	0	1	3	4	2
22	4	3	2	1	1	0	0	0	2*	1	3	2
ALL	4	3	3	2	1	1	1	1	1	4	5	2

NOTE: * Z VALUE > 0 AND < 0.5 PERCENT

STATION CLIMATIC SUMMARY

(Derived from hourly telecommunications data)

WMO NO. 22165: Kanin Nos, USSR

LAT: 68°39'N

LON: 43°18'E

ELEV: 161 Ft

Period of record (hourly): 1973-1989

Period of record (daily): 1973-1989

TEMPERATURE (DEG F)										REL HUMIDITY (%)										WIND SPEED (KTS)										WIND DIR (DEG)										TEMP (DEG F)										PRECIPITATION (IN)										PEAK NO. 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